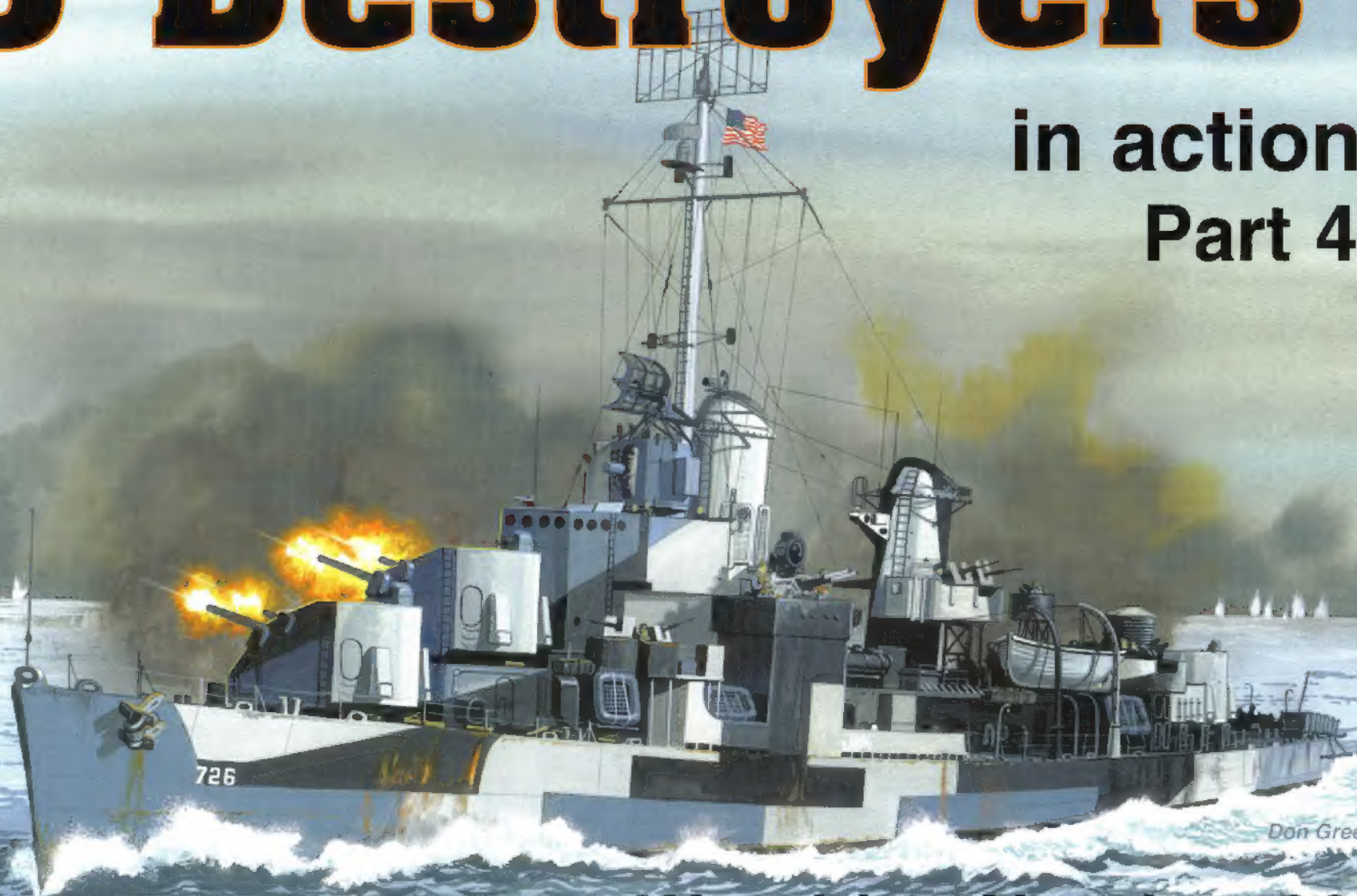


US Destroyers

in action
Part 4



Don Greer

Warships Number 22
squadron/signal publications



US Destroyers

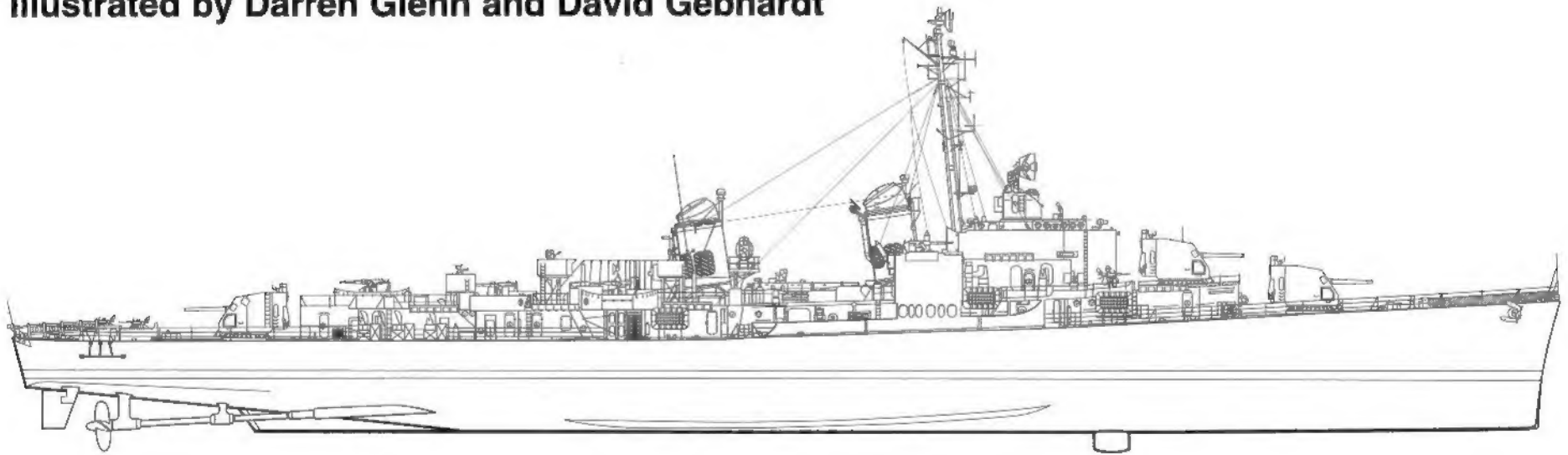
in action

Part 4

By Al Adcock

Color by Don Greer

Illustrated by Darren Glenn and David Gebhardt



Warships Number 22
squadron/signal publications



The ALLEN M. SUMNER Class destroyer USS MEREDITH (DD-726) provided shore bombardment at Utah Beach, Normandy during the Allied invasion of France on 6 June 1944. She is camouflaged in Measure 32/3d and was assigned to Task Force 'U' for the invasion (Operation OVERLORD). MEREDITH struck a German mine in the Bay of the Seine on 8 June 1944 and was sunk by a German 2205 pound (1000 kg) bomb while undergoing salvage the next day.

Acknowledgements

All of the photographs are Official US Navy or provided by former US and foreign naval personnel and have been declassified for use in this title.

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Author's Note:

FS numbers were developed after World War Two and their use here is solely an approximation.

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USS FRANK KNOX (DD-742) was one of five GEARING Class destroyers to be completed in time to see service during World War Two. She is camouflaged in Measure 33a/28d while she undergoes trials off Rockland, Maine during December of 1944. FRANK KNOX was converted to a radar picket and redesignated as DDR-742. She earned one Battle Star in the Pacific War Zone. (Real War Photo)



Introduction

This is the fourth and last title in the series covering US Navy Destroyers designed and built from the beginning of the 20th Century to the end of World War Two. The destroyer was the most widely constructed warship in the US Naval Register, and built in many classes that spanned over 50 years. The 'tin can' was – and is – the most revered of all ships due to the many different combat roles that the destroyer is called upon to perform. Since 1900, over 1500 destroyers (DD) and destroyer escorts (DE) have been built and commissioned into service.

When Germany attacked Poland on 1 September 1939 to start World War Two, the US Navy had less than 75 modern destroyers; those units built from 1934 to 1939. This number did not include the obsolescent World War One era 'flush deck' destroyers. When the war ended in September of 1945, the US destroyer strength stood at over 400 ships with many still on the builders' ways. The last war era destroyer, the **GEARING Class** USS **TIMMERMAN** (DD-828), was not commissioned until 1952.

The first US destroyer, USS **BAINBRIDGE** (DD-1), was conceived in the early 20th Century as an ocean escort designed to clear the sea-lanes for the larger capital ships. As new threats such as submarines and aircraft came about during World War One, new defensive and offensive weapons had to be developed to counter the threats to the fleet. Countering these new threats required the destroyers to grow in size and displacement to accommodate the new weapons. The first US destroyers were nearly 250 feet (76.2 m) in length and displaced some 420 tons¹ (427 MT). Armament usually consisted of two 3-inch (76mm) guns and two single tor-

¹A ton in this book is the long ton of 2240 pounds (1016 kg).

USS **FLETCHER** (DD-445), the lead ship in the class, is underway off New York on 18 July 1942 and camouflaged in a Modified Measure 12 System. **FLETCHER** was armed with five 5-inch(127mm)/38 dual-purpose naval guns in single mounts and ten 21-inch (533mm) torpedo tubes in two quintuple mounts. The **FLETCHERs** were rated at 2100 tons (2134 MT) with a speed of 35 knots (40 MPH/65 KMH). (Naval Historical Center)



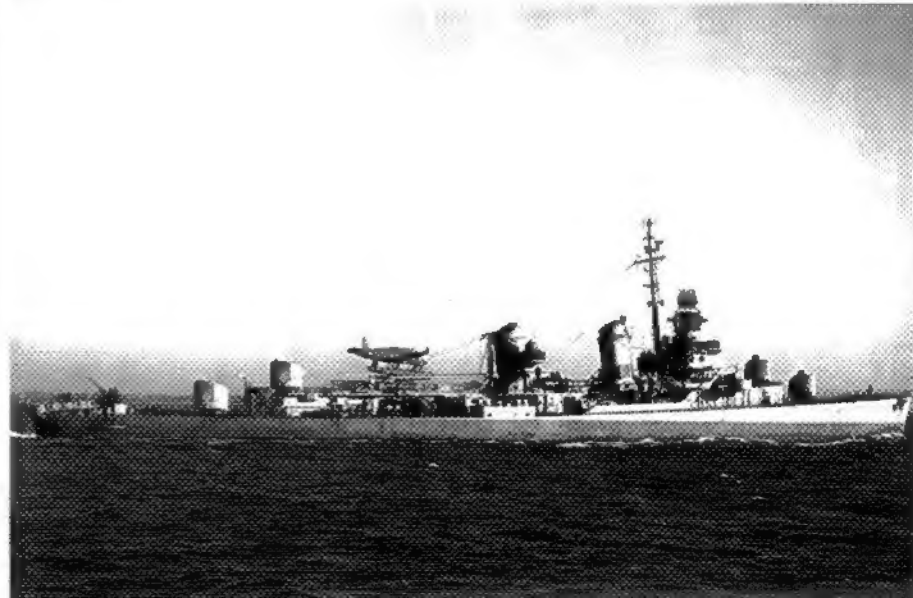
pedo tubes. In stark contrast, the late World War Two era **ALLEN M. SUMNER** and **GEARING Class** destroyers were almost 400 feet (121.9 m) long and displaced over 3300 tons (3353 MT) full war load. These ships were armed with six 5-inch (127mm) guns and numerous 40mm and 20mm anti-aircraft guns, ten torpedo tubes, and depth charges.

The **FLETCHER** (DD-445) Class² was built between the pre-war **LIVERMORE** (DD-429) Class and the war era **ALLEN M. SUMNER** (DD-692) Class. The **FLETCHER** Class was conceived in 1940 and construction began using a Gibbs & Cox Naval Architect design. One hundred seventy-five units of this class were built by 1943. The **FLETCHERs** were powered by Babcock & Wilcox boilers and General Electric geared turbines turning twin screws. With 60,000 available horsepower (HP), the **FLETCHERs** were capable of 35 knots (40 MPH/65 KMH). The main battery consisted of five 5-inch/38 caliber³ dual-purpose guns in single mounts. Up to twelve 40mm Bofors cannon and twelve 20mm Oerlikon cannon were mounted for anti-aircraft protection. The **FLETCHERs** were superb fighting ships, but the US Navy wanted additional firepower and range for extended Pacific operations. The Navy conceived two experimental **FLETCHERs** – USS **PERCIVAL** (DD-452) and USS **WATSON** (DD-482). **WATSON** was to be powered by new, lightweight super high-pressure Foster-Wheeler and Babcock & Wilcox boilers, with General Electric and Westinghouse supplying the geared turbines. This power plant combination would eventually be installed in the experimental destroyer USS **TIMMERMAN** (DD-828) in the early 1950s. **PERCIVAL** was to have been powered by a diesel-electric power plant, but construction of Destroyer Escorts (DE) with similar equipment probably doomed the project. Ultimately, neither ship was actually built; the Navy opted for a new, clean-sheet-of-paper design. Thus, the **ALLEN M. SUMNER** Class was born.

²See Fletcher DDs in action (4008) from squadron/signal publications.

³A naval gun's caliber is the barrel's length divided by the bore diameter. For example, the 5-inch/38 caliber gun had a 190-inch (4826mm) long barrel.

Four **FLETCHER** Class destroyers were converted to carry a float plane in 1944. The Number Three 5-inch mount (Mount 53) and the Number Two quintuple 21-inch torpedo tubes were removed and replaced with an aircraft handling crane and catapult. USS **STANLEY** (DD-478), camouflaged in Measure 22, has an OS2N-1 – a version of the Kingfisher built by the Naval Aircraft Factory (NAF) – fitted to the catapult. (National Archives)



The ALLEN M. SUMNER and GEARING Classes were designed to operate in the Pacific, where the destroyer's range took precedence and anti-aircraft armament became important for protecting the ship and task force from the Japanese *kamikaze* ("Divine Wind") suicide attack aircraft threat. As originally fitted, 40MM Bofors and 20MM Oerlikon cannon were installed to augment the main armament of six 5-inch/38 dual-purpose guns in three twin mounts. The 5-inch guns were furnished with anti-aircraft proximity fuses that exploded when in close contact with an enemy aircraft.

The SUMNER and GEARING Classes were camouflaged during World War Two in the Navy Blue System of Measure 21, the Graded System of Measure 22 and the Light, Medium, and Dark Pattern Systems of Measures 31, 32, or 33. It was common practice to paint all destroyers in a Destroyer Division or Squadron in the same camouflage scheme to confuse the enemy and keep continuity within the fleet. The year determined the particular camouflage scheme that was normally applied during an overhaul period in a repair and refit yard. Following the cessation of hostilities in September of 1945, most destroyers were repainted in the Haze Gray System of Measure 27, also called 'peace time gray.' There were some exceptions: USS GYATT (DD-712) was photographed in the North Atlantic still camouflaged in Measure 22, the Graded System in 1949.

Destroyers played an important part in the hostilities that began in earnest for the US Navy on 7 December 1941. Before that 'Day of Infamy,' the US Navy had been busy in the North Atlantic escorting convoys from the United States and Canada to Great Britain. Once the Pacific War began, destroyers were called upon to perform additional convoy escort duties, hunt enemy submarines, provide shore bombardment, and screen the fleet from air, surface, and sub-surface attacks. All of these responsibilities were performed up to the highest standards, with over 30 Presidential Unit Citations awarded to the gallant destroyers and their crews

20MM Oerlikon Mk 4 Cannon

Length of Bore:.....70 calibers – 55.1 inches (140 cm)
 Weight of Projectile: 0.3 pound (0.1 kg)
 Muzzle Velocity:.....2740 feet (835 m) per second
 Maximum Range:.....4800 yards (4389 m)
 Ceiling:.....10,000 feet (3048 m)
 Elevation Range:.....-5° to +87°
 Rate of Fire:.....450 rounds per minute

40MM Bofors Mk 1/2 Cannon

Length of Bore:.....60 calibers – 94.5 inches (240 cm)
 Weight of Projectile: 2 pounds (0.9 kg)
 Muzzle Velocity:.....2890 feet (881 m) per second
 Maximum Range:.....11,000 yards (10,058 m)
 Ceiling:.....22,800 feet (6949 m)
 Elevation Range:.....-15° to +90°
 Rate of Fire:.....160 rounds per minute

5-Inch (127MM)/38 Caliber Mk 12 Gun

Length of Bore:.....38 calibers – 190 inches (482.6 cm)
 Weight of Projectile: 55 pounds (25 kg)
 Muzzle Velocity:.....2600 feet (792 m) per second
 Maximum Range:.....18,200 yards (16,642 m) at 45° elevation
 Ceiling:.....37,200 feet (11,339 m) at 85° elevation
 Elevation Range:.....-15° to +85°
 Rate of Fire:.....15 rounds per minute



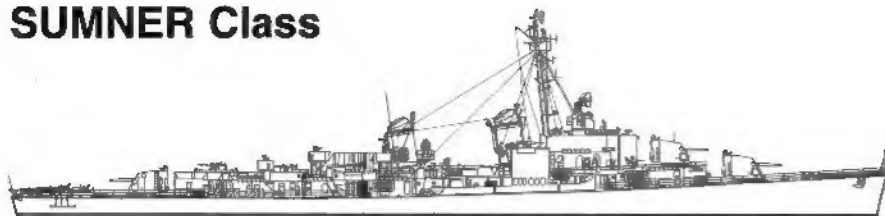
The FLETCHER Class USS THE SULLIVANS (DD-537) was named to honor the five Sullivan Brothers. They were killed while serving aboard the light cruiser USS JUNEAU (CL-52) when she was sunk during the Battle for Guadalcanal on 13 November 1942. After World War Two, THE SULLIVANS was altered with the 'four-gun' modification and with a tripod mast fitted in place of the pole mast. Further modifications included the removal of the 40mm anti-aircraft cannon and replacing them with radar-equipped 3-inch (76mm) rapid-fire guns. (Naval Historical Center)

FLETCHER was modified in the early 1960s to an ocean escort and reclassified as DDE-445. The modifications included the removal of the Number Two 5-inch mount and replacing it with the Mk 108 anti-submarine weapon. Further modifications included the installation of a tripod mast just forward of the number two stack and 3-inch guns replacing the 40mm cannon. AN/SPS-10 surface search and AN/SPS-49 air search radar antennas are fitted to the top of the foremast. (Naval Historical Center)

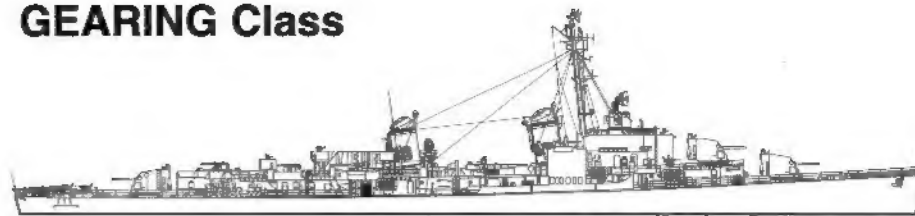


Development

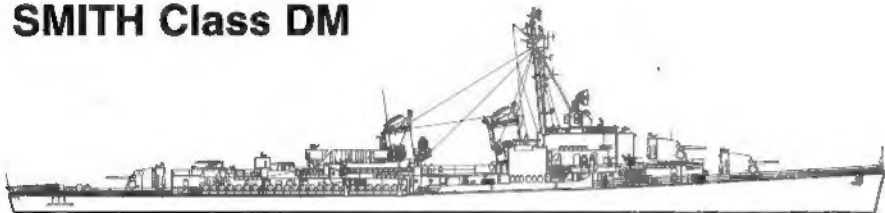
SUMNER Class



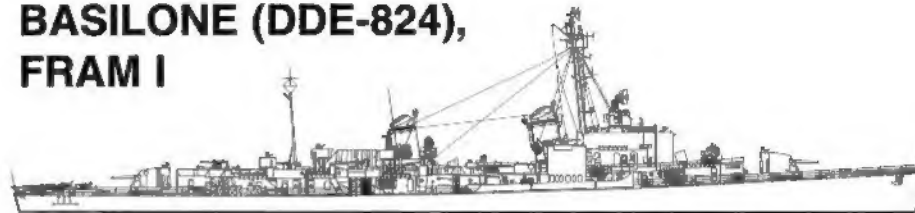
GEARING Class



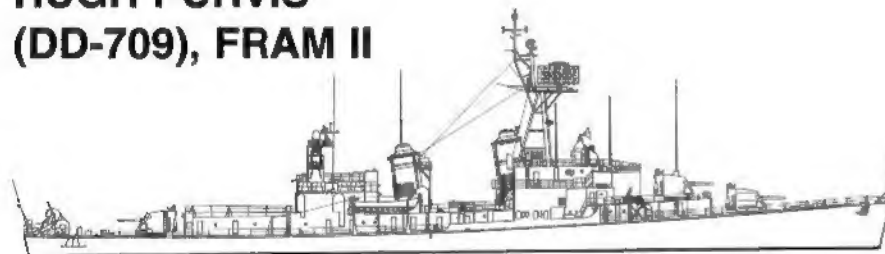
SMITH Class DM



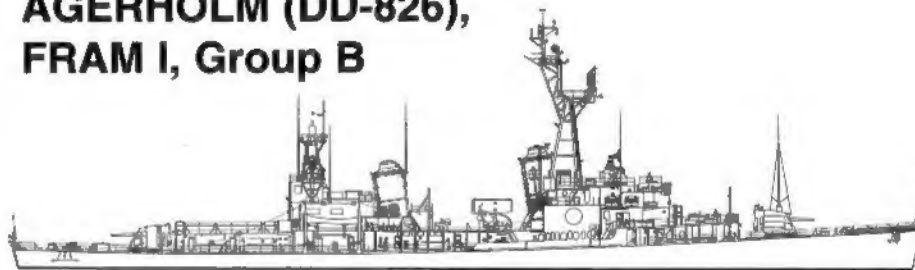
BASILONE (DDE-824), FRAM I



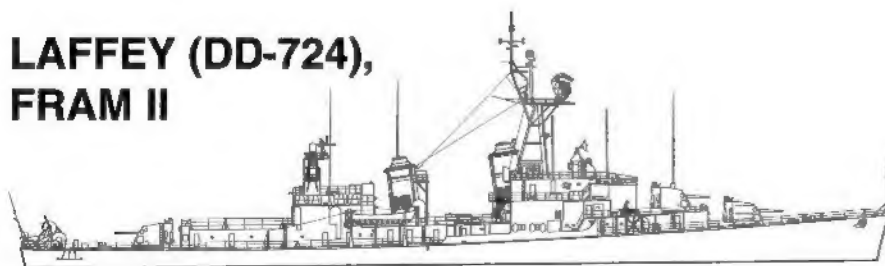
HUGH PURVIS (DD-709), FRAM II



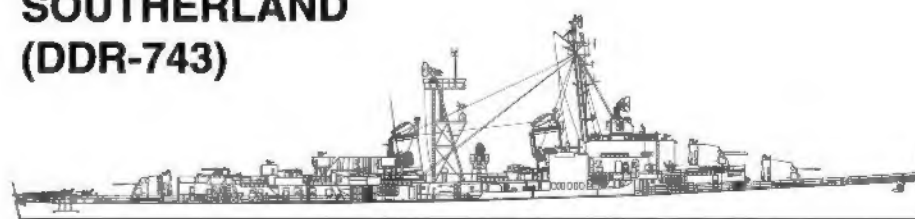
AGERHOLM (DD-826), FRAM I, Group B



LAFFEY (DD-724), FRAM II



SOUTHERLAND (DDR-743)



ALLEN M. SUMNER Class

The ALLEN M. SUMNER Class was a direct development of the first fleet destroyer, the FLETCHER Class. This new class adopted the same hull length, but with a 1 foot 2 inch (0.3 m) increase in beam to accommodate the new six-gun main battery. The naval architects of Gibbs & Cox – designers of the earlier FLETCHER Class – also designed the ALLEN M. SUMNER Class.

The ALLEN M. SUMNER Class was 376 feet 6 inches (114.8 m) in overall length, 369 feet (112.5 m) long at the waterline, and had a beam of 40 feet 10 inches (12.4 m). The FLETCHERs had a beam of 39 feet 8 inches (12.1 m). Standard draft for the SUMNERs was 14 feet 5 inches (4.4 m), while their maximum draft was rated at 15 feet 8 inches (4.8 m). Their standard designed displacement was 2200 tons (2235 MT) and the maximum full wartime displacement amounted to 3315 tons (3368 MT).

Power for the ALLEN M. SUMNER Class came from four Babcock & Wilcox boilers with a pressure of 565 pounds per square inch (PSI) and a temperature of 850° Fahrenheit (454° Celsius). The boilers provided steam to a pair of Westinghouse turbines. A pair of DeLaval locked-train double-reduction gears drove the twin screws. The 60,000 total available horsepower (HP) gave the SUMNERs a rated speed of 36.5 knots (42 MPH/68 KMH) at standard displacement. An onboard fuel capacity of 400 tons (406 MT) provided for a range of 3300 nautical miles (3800 miles/6115 KM) at 20 knots (23 MPH/37 KMH). Two 400-kilowatt and two 100-kilowatt generators were installed to boost power for the electronic equipment and to provide emergency power.

The SUMNERs' main battery consisted of six 5-inch (127MM)/38 Dual Purpose (DP) guns situated in three twin Mk 32 mounts – two forward and one aft. The Number Two (Mount 52¹) was in a superfiring position over Mount 51. The dual-purpose 5-inch/38 guns were introduced on the earlier FARRAGUT (DD-348) Class and could be used on surface and air targets with an elevation limit of -15° to +85°. The gun mount was provided with 0.75-inch (1.9 cm) thick armor and was directed by the Mk 37 Gun Director. The Mk 37 was fitted with Mk 19 and Mk 22 radars that provided both altitude and range to target. For anti-aircraft protection, the 5-inch guns would fire the AAC/AAT-VT² proximity fused ammunition that exploded when the round reached close to the aerial targets. The secondary armament consisted of a pair of 40MM Bofors quad mount cannon. The two quad mounted weapons were increased to three in 1945 and further augmented by a pair of twin 40MM mounts on the superstructures abreast the forward stack. The close-in or 'last ditch' armament initially consisted of ten 20MM Oerlikon cannon in single mounts, but was increased to 12 weapons in 1945. It was said when the 20MM cannon began firing that it was time to find safe cover.

A pair of Mk 14 and 15 quintuple 21-inch (533MM) torpedo tubes were also fitted, with one mount between the stacks and one mount on the aft superstructure. No reloads were provided; once the Mk 17 torpedoes were expended, the destroyer would have to seek a Destroyer Tender (AD) or a shore base to rearm. Owing to the increased air threat in 1945, the torpedo mount between the stacks was often replaced by the third 40MM quad mount.

The anti-submarine weapons consisted of a pair of depth charge roller tracks fitted to the stern and six Mk 6 K-guns firing out to both port and starboard. The depth charge tracks and K-guns were fitted with either Mk 6 'ash can' or Mk 9 or Mk 14 fast sinking depth charges.

The SUMNERs were fitted with various Mk of SR or SC radars for air search and SG radars



USS ALLEN M. SUMNER (DD-692) was the lead ship in a class that eventually numbered 70 ships. She is camouflaged in Measure 31/16d during 1944. ALLEN M. SUMNER is fitted with SA air search and SG surface search radars on her pole mast. Launched on 15 December 1944, she commissioned in time to see service in the Pacific. (Naval Historical Center)

ALLEN M. SUMNER served in the Mediterranean in the 1960s and was finished in camouflage Measure 27, the Haze Gray System adopted for peacetime. The radar system has been upgraded to AN/SPS-40 air search and AN/SPS-10 surface search systems. The fire control director system has been fitted with Mk 28 radar replacing the earlier Mk 22 and 12 antennas. (Naval Historical Center)



¹Mount 52 referred to the second 5-inch mount from the ship's bow.

²AAC: Anti-Aircraft Common; AAT-VT: Anti-Aircraft Tracer – Variable-Time fuse.



USS MOALE (DD-693) was the second of her class to be constructed by Federal Shipbuilding & Drydock and commissioned on 28 February 1944. In the 1960s, MOALE underwent a Fleet Rehabilitation And Modernization (FRAM) II Program 61C upgrade that added a hangar for the QH-50 Drone Anti-Submarine Helicopter (DASH) between the aft stack and the Number Three 5-inch mount. (National Archives)

USS INGRAHAM (DD-694) has the tripod mast and the AN/SPS-10 surface search and AN/SPS-49 air search radar antennas. The aft stack has been fitted with Tactical Air Navigation dome antennas. INGRAHAM was assigned to the Atlantic Fleet in 1957 when she visited Amsterdam, the Netherlands on 10 October. (Naval Historical Center)



for surface search. Both the air search and surface search radars were upgraded as new equipment became available. Both AN/SPS-40 air search and AN/SPS-10 surface search radars were fitted following Fleet Rehabilitation And Modernization (FRAM) II conversions in the 1970s. An SQS-4 sonar was fitted to the bottom of the forward hull to locate submarines and give targeting information to the depth charge crews.

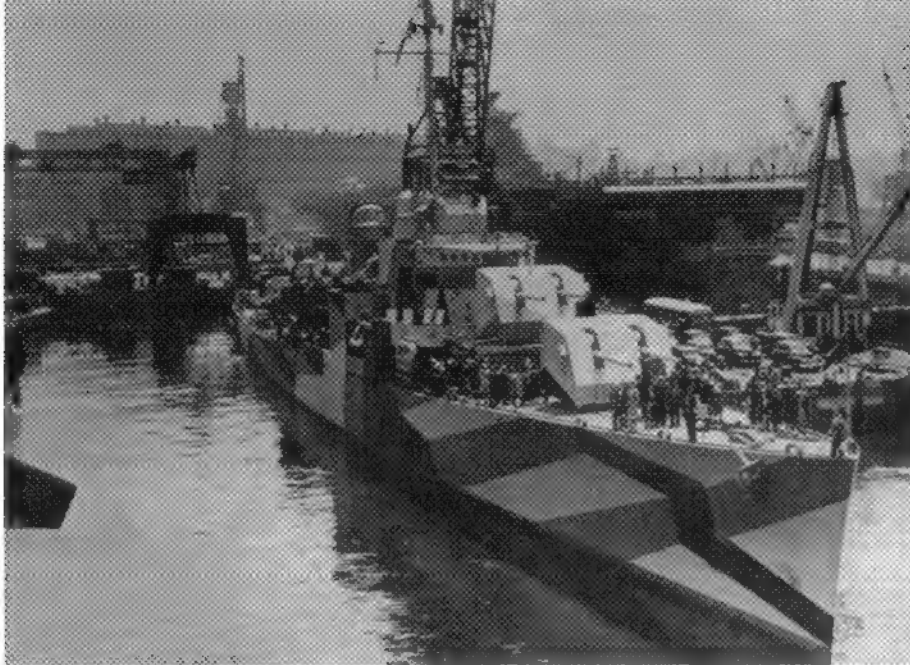
Five shipyards were charged with the construction of the 70 ALLEN M. SUMNER Class destroyers: two on the Atlantic coast and three on the Pacific. Federal Shipbuilding & Drydock, Port Kearney, New Jersey and Bath Iron Works, Bath, Maine were chosen to be the lead contractors, with Bethlehem Steel at San Pedro and San Francisco, California and Todd-Pacific Shipyards in Seattle, Washington coming on later in 1943.

Four SUMNER Class ships were lost, with the first occurring in the Atlantic on 9 June 1944. USS MEREDITH (DD-726) struck a mine during the Normandy Invasion and while undergoing salvage was sunk by a German aerial bomb. This weapon sent her to the bottom of the Seine Estuary. MEREDITH had only been in commission since 14 March 1944 when she was sunk. The next three losses occurred in the Pacific, with COOPER (DD-695) the first lost to Japanese action. She was cruising in Ormoc Bay, Leyte, the Philippines in company with ALLEN M. SUMNER (DD-692) and MOALE (DD-693) when they found themselves in the midst of a Japanese invasion fleet. The battle engaged and both sides soon fired guns and torpedoes. A Japanese 24-inch (610MM) 'Long Lance' torpedo – probably launched by the escort destroyer TAKE – hit COOPER, which sank and took 191 of her crew with her to the bottom. MANNERT L. ABELE (DD-733) became the first US ship to be sunk by a Yokosuka MXY7 *Ohka* (Allied code name *Baka*) piloted bomb off Okinawa on 12 April 1945. The *kamikaze* claimed DREXLER (DD-741) off Okinawa on 28 May 1945.

In 1944, the US Navy decided to convert 12 ALLEN M. SUMNER Class destroyers to Destroyer Light Minelayers (DM) to increase the offensive mine laying capability. The conversion included installing mine tracks on either side of the main deck that went from the fantail to the weather deck below the bridge. The rails had a capacity of 120 mines – 60 per side. Both torpedo tubes were removed to reduce top weight. Displaced 20MM mounts K-guns were moved into the space occupied by the torpedo mounts. The stern mounted depth charge roller tracks were moved in toward the centerline to retain the destroyer's Anti-Submarine Warfare (ASW) capability. Ironically, the DMs were never used in the capacity they were designed for; instead, they were used as radar picket ships and to provide shore bombardment for invasion forces.

Thirty-three ALLEN M. SUMNER Class ships – starting with USS JOHN W. THOMASON (DD-760) – began undergoing Fleet Rehabilitation And Maintenance (FRAM) II Programs 59, 60C, 61C, and 62 from 1959. The programs were designed to extend the service life and capabilities of the aging destroyers during the Cold War. Most of the modifications were specifically designed to improve the destroyers' anti-submarine capabilities. The conversion included the addition of a hangar facility and flight deck on the aft superstructure for the Gyrodyne QH-50 Drone Anti-Submarine Helicopter (DASH). A Variable Depth Sonar (VDS) was added to the fantail. The VDS employs a pressure vessel tethered to the ship and lowered below a thermal layer of water, which deflects signals from hull-mounted sonars. The sonar within the VDS pressure vessel can detect submarines hiding under thermal layers.

Additionally, a pair of Mk 32 triple torpedo launchers for the 12.75-inch (324MM) Mk 46 acoustic short range ASW torpedoes were mounted on Deck Level 01 to either side of the Mount 52 5-inch gun mount. Two single-mount Mk 25 torpedo tubes, each with a 21-inch (533MM) Mk 48 long-range torpedo, were placed between the stacks. The Mk 48 was



USS CHARLES S. SPERRY (DD-697), camouflaged in Measure 32/9d, awaits the moment of her commissioning at the Federal Shipbuilding & Drydock at Port Kearney, New Jersey on 17 May 1944. A US fleet carrier in the background undergoes repairs. CHARLES S. SPERRY was sold to the Chilean Navy in January 1974 and renamed MINISTRO ZENTENO (16). (National Archives)

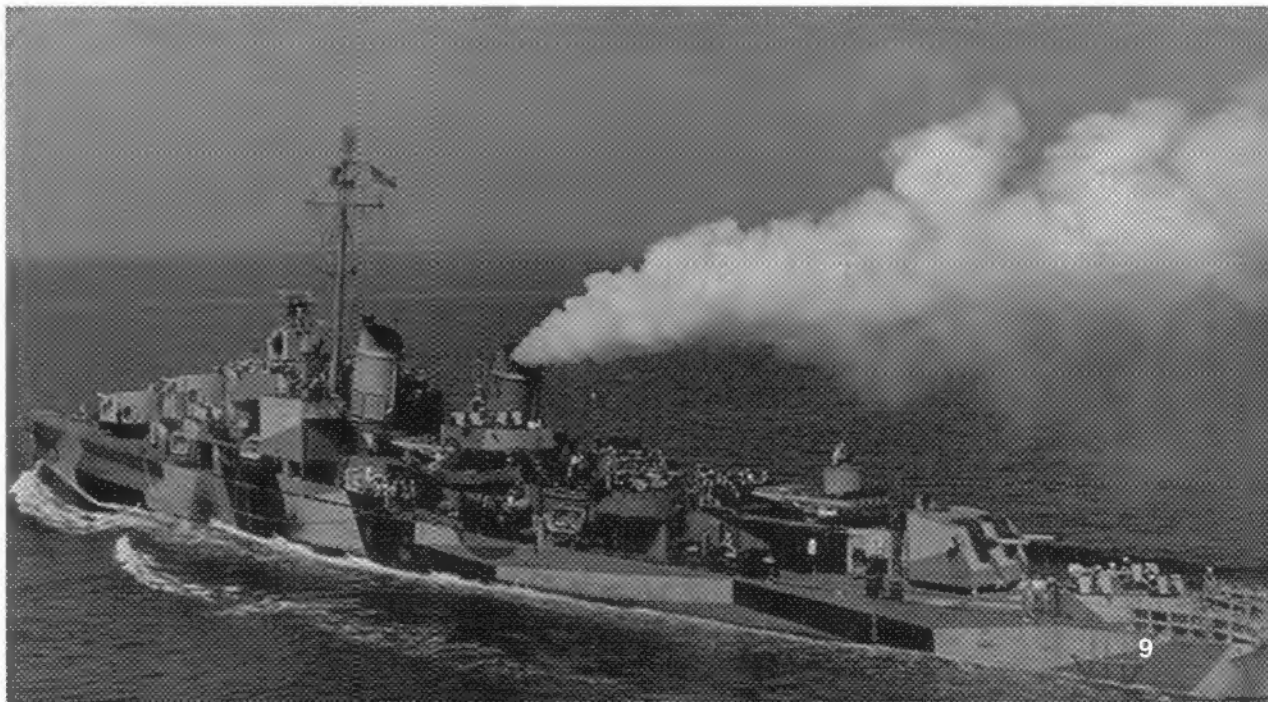


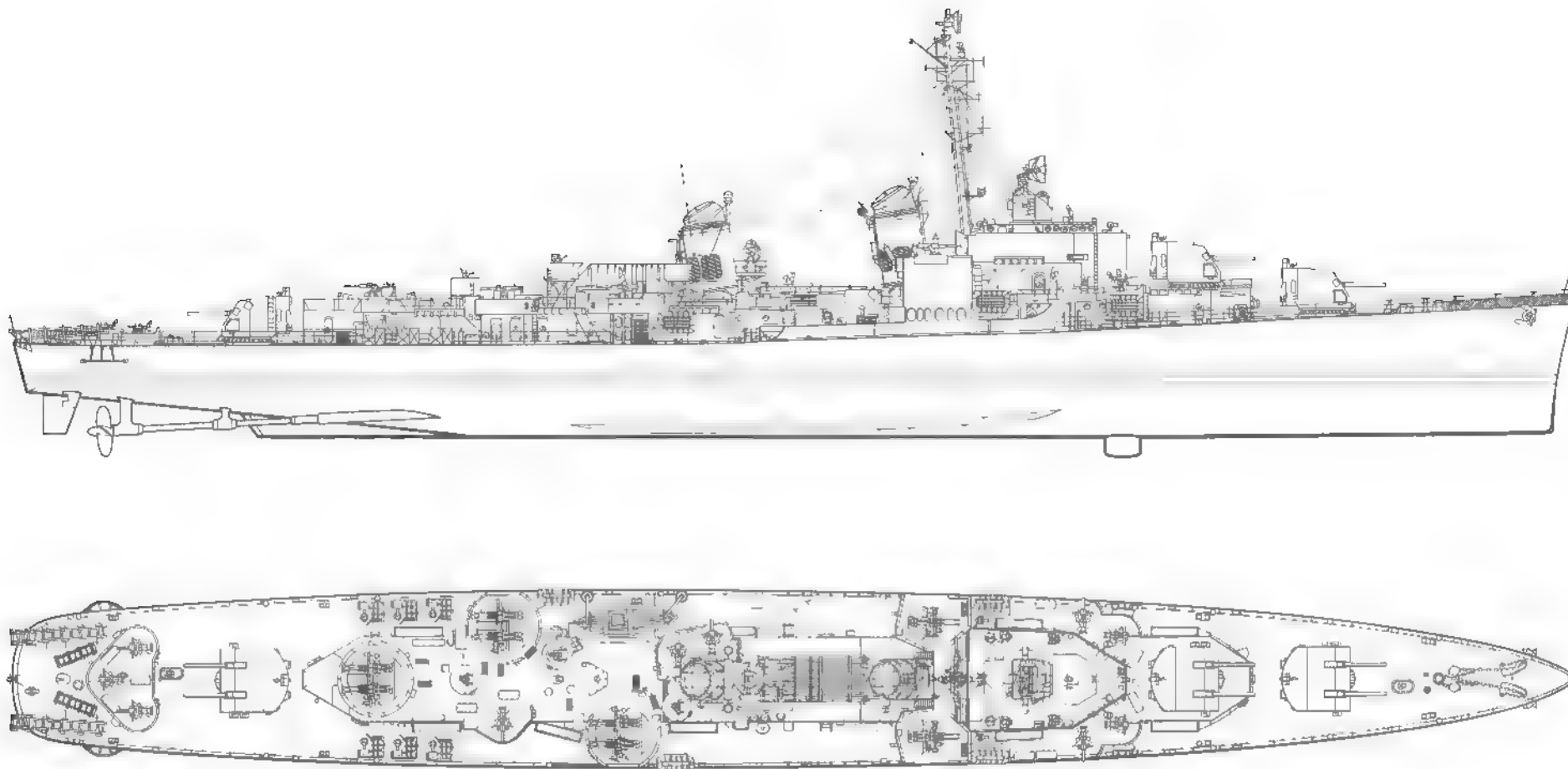
USS COOPER (DD-695) was the first of her class to be sunk by enemy action in the Pacific. On 3 December 1944, she sailed with her sister MOALE (DD-693) when they began engaging Japanese ships intending to land troops on Leyte, the Philippines. A 'Long Lance' torpedo launched by a Japanese destroyer sank COOPER in Ormoc Bay. COOPER was camouflaged in Measure 32/3d. (Naval Historical Center)

employed for ASW and anti-ship attacks. This weapon had wire guidance early in the attack run, then went to active/passive acoustic homing in the terminal phase. In this guise, the SUMNERs served in both the active Atlantic and Pacific Fleets until they were either scrapped or sold to foreign navies beginning in 1970. The first of these to go overseas was USS ENGLISH (DD-696), which was sold to Taiwan. This ship was renamed HUEI YANG (DD-972) and placed in the LO YANG Class.

During the construction of the ALLEN M. SUMNER Class, it became apparent that more range was required in order to provide continual escort to the fast fleet carriers. The Navy looked directly at the SUMNER Class and began devising a method to increase their range. The plans evolved into the GEARING (DD-710) Class destroyer.

USS WALDRON (DD-699) blows steam from her aft stack while underway in July of 1944. She was named to honor Commander John C. Waldron, the commanding officer of the ill-fated Torpedo Squadron Eight (VT-8), who was killed during the 4 June 1942 Battle of Midway. WALDRON was camouflaged in Measure 32/9d in 1944. (Naval Historical Center)





USS ALLEN M. SUMNER (DD-692) Specifications, 1945

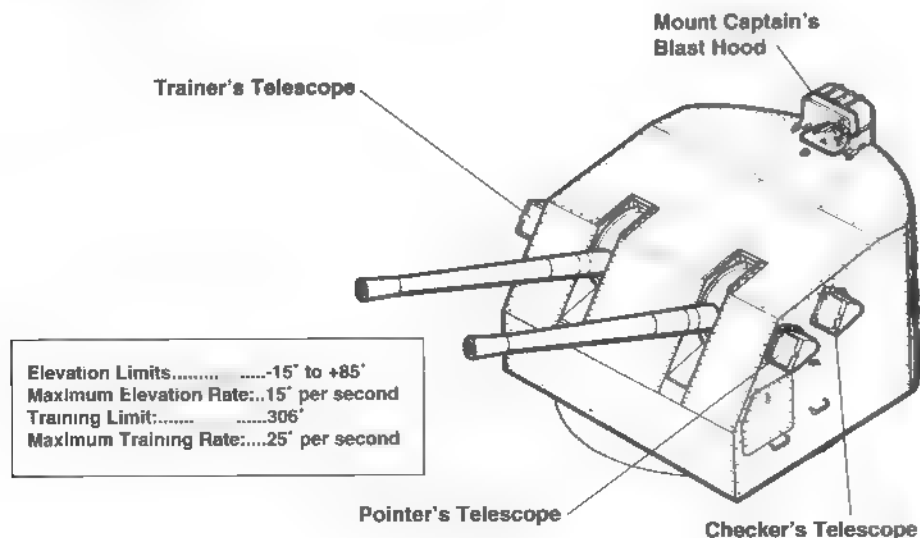
Overall Length:.....376 feet 6 inches (114.8 m)
 Beam:.....40 feet 10 inches (12.4 m)
 Draft:.....15 feet 8 inches (4.8 m)
 Standard Displacement:..2200 tons (2235 MT)
 Full Load Displacement:..3315 tons (3368 MT)
 Machinery:.....Four Babcock & Wilcox boilers, two
 Westhinghouse geared turbines generating
 60,000 SHP; two screws
 Speed:.....36.5 knots (42 MPH/68 KMH)

Range:.....5000 nautical miles (5758 miles/9266 KM) at 15
 knots (17 MPH/28 KMH)
 Complement:.....350
 Armament:.....Six 5-inch (127mm)/38 caliber guns in three
 twin mounts; sixteen 40mm cannon in four
 quad mounts; twelve 20mm cannon in single
 mounts; ten 21-inch (533mm) torpedo tubes in
 two quintuple mounts.



In the early 1960s, WALDRON underwent a FRAM II Program 62 upgrade that added a hangar for the DASH helicopter and a tripod mast for the AN/SPS-40 air search and AN/SPS-10 surface search radar antennas. Both forward 5-inch mounts have radio and data communication antennas fitted to their roofs. WALDRON is camouflaged in the 'peace time' Measure 27 Haze Gray System. (Naval Historical Center)

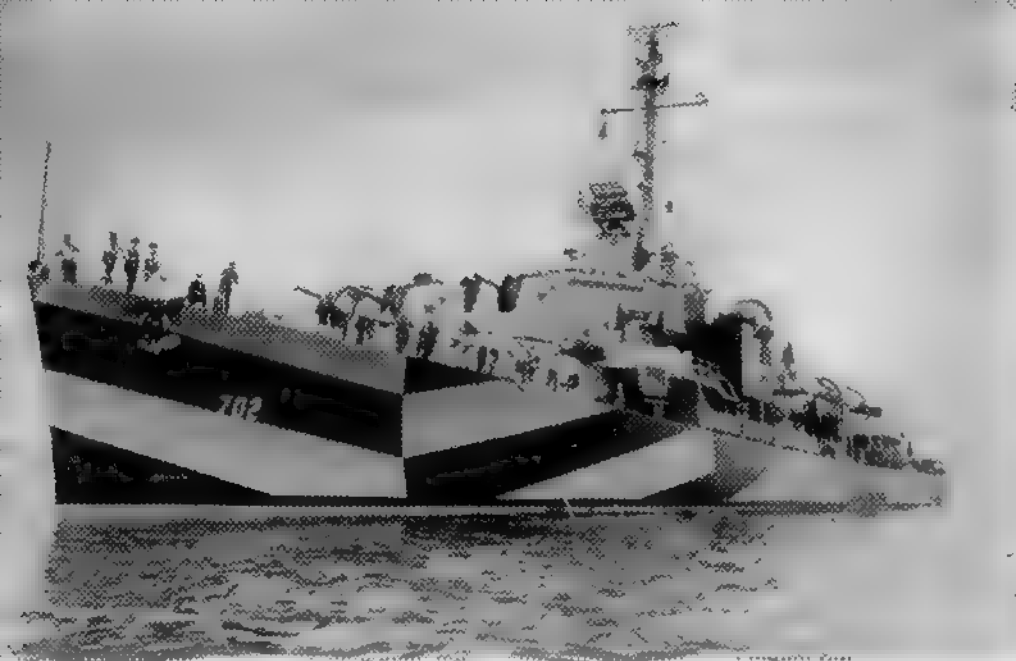
5-Inch (127mm)/38 Caliber Mk 32 Mod. 0 Twin Mount



USS JOHN W. WEEKS (DD-701) is delivered to the US Navy on 20 July 1944, four days before her commissioning ceremonies. She is camouflaged in Measure 32/9d, a scheme she wore for a period of time in the Pacific in service with Destroyer Squadron Sixty-Two (DesRon 62). JOHN W. WEEKS' air and surface search radar antennas have yet to be fitted to the foremast – or have been removed by wartime censors. (Floating Drydock)

In 1945, JOHN W. WEEKS was camouflaged in the Graded System of Measure 22. She is fitted with additional wire radio antennas strung between the foremast and the single pole main mast. JOHN W. WEEKS served with Destroyer Division One Hundred Twenty-Four (DesDiv 124) in the Pacific. She was expended as a target following her last decommissioning in August of 1970. (National Archives)





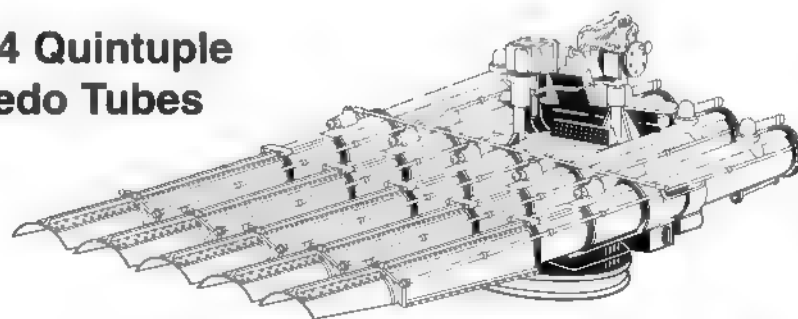
USS HANK (DD-702) is camouflaged in Measure 31/16d on her delivery cruise to the US Navy from Federal Shipbuilding on 26 August 1944. She has SG surface search and SR air search radar antennas fitted to the foremast. In July of 1972, HANK was sold to Argentina and renamed SEGUI (D 25). In 1978, she was fitted with the French MM 38 Exocet anti-ship missile system. She participated in the Falkland Islands War as part of Task Force 79.2 in 1982. (Naval Historical Center)

USS COMPTON (DD-705), in Measure 32/11a, moves slowly toward the dock just before her commissioning in November of 1944. The foremast is fitted with SG surface search and SR air search radars, while whip antennas are fitted to the aft stack. In September of 1972, COMPTON was sold to Brazil and renamed MATTO GRASSO (D.34). (Floating Drydock)

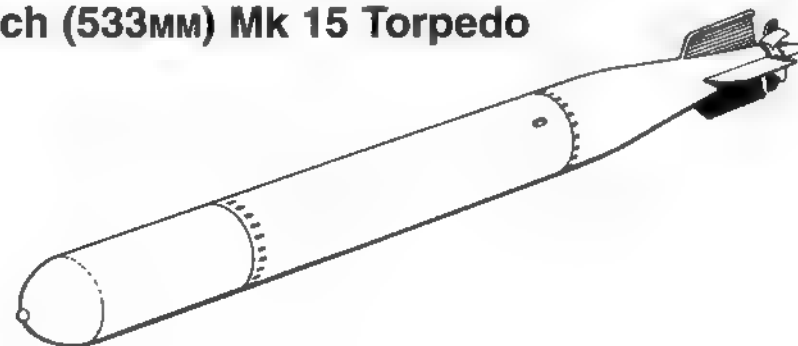


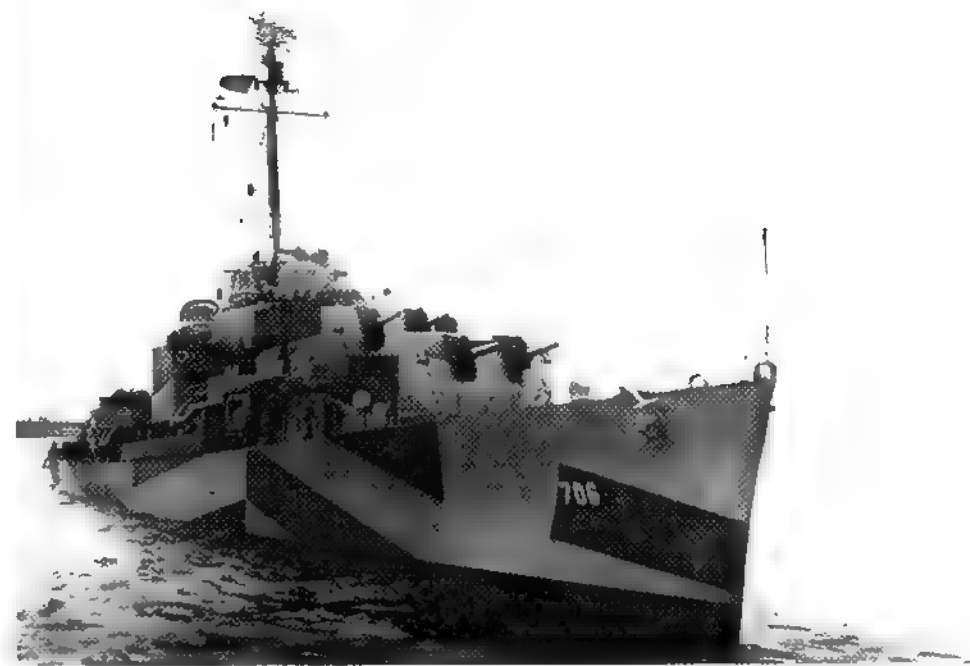
USS WALLACE L. LIND (DD-703) pounds through rough seas off Korea in April of 1951. The armament and radar suite remains basically the same as her World War Two configuration, with the addition of radar countermeasure radomes on the aft stack. In December of 1972, she was sold to South Korea and renamed DAE GU (917). (Naval Historical Center)

Mk 14 Quintuple Torpedo Tubes



21-Inch (533mm) Mk 15 Torpedo





(Above) USS SOLEY (DD-707) cruises off New York on 22 December 1944 wearing a Measure 32/11a camouflage scheme. SOLEY has the latest bridge configuration, which featured a walk around platform surrounding the wheelhouse. The platform provided weather protection and additional space for aerial and surface lookout positions. The Mk 37 Mod 17 gun director, atop the bridge, is swung around to starboard. (Naval Historical Center)

(Above Right) USS GAINARD (DD-706) is off Port Kearney, New Jersey on 22 November 1944, one day before her commissioning. She is camouflaged in Measure 31/16d and her Mk 12 and Mk 22 radar antennas have yet to be fitted to the Mk 37 gun director. GAINARD was sold for scrap in February of 1971 after 26 years of service. (Floating Drydock)

(Right) SOLEY had all of her 40MM anti-aircraft guns replaced by the 3-inch (76mm) rapid-fire gun during the early 1950s. The new weapons were capable of firing proximity-fused ammunition. She is still fitted with her Number One quintuple 21-inch torpedo tubes between the stacks. The Mk 37 gun director is now fitted with the Mk 28 radar antenna replacing the Mk 12 and 22 antennas. (Naval Historical Center)





USS BORIE (DD-704), still configured with World War Two-era torpedo tubes and 40mm cannon, serves off Korea during 1952. She was named to honor the 'flush deck' BORIE (DD-215) that rammed and sank the German submarine U-405. The intentional ramming caused fatal damage to the destroyer as well. The new BORIE earned three Battle Stars for her World War Two service and four for her Korean War service. She was sold to Argentina in July of 1972 and renamed HIPOLITO BOUCHARD (D 26). (Naval Historical Center)

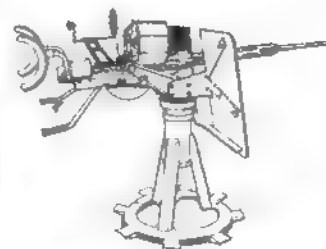
SOLEY operates off the Florida coast in July of 1959. She is fitted with Mk 11 Hedgehog launchers on either side of the conning tower area, a modification that deleted the 20mm anti-aircraft guns previously mounted in this area. She carries AN/SPS-10 surface search and AN/SPS-40 air search radars atop her pole foremast and radar countermeasure radomes on her aft stack. Her Mk 37 fire control director is now fitted with Mk 28 radar. (Naval Historical Center)



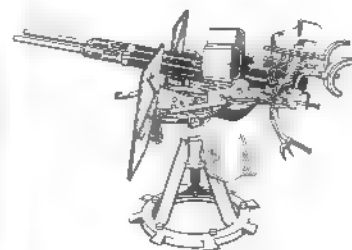
Ready for action, the port side 40mm gun aboard USS ENGLISH (DD-696) is manned and ready to provide support and suppressive fire off the Korean coast during the winter of 1950-51. The three 40mm Bofors quad mounts were radar directed, but still retained the manned training and sighting positions. ENGLISH was sold to Taiwan in August of 1970 and renamed HUEI YANG (972). (Naval Historical Center)

Light Anti-Aircraft Armament

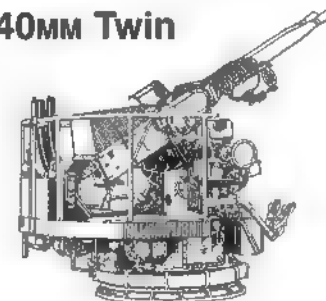
20MM Single



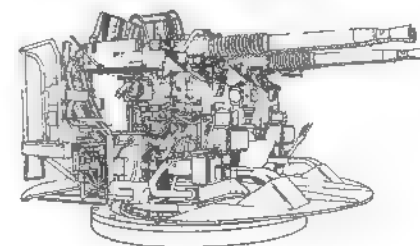
20MM Twin



40MM Twin



40MM Quad





USS BARTON (DD-722), the battleship USS IOWA (BB-61), and the fleet carrier USS PHILIPPINE SEA (CV-47) await their turn for refueling while operating off the Korean coast in 1952. BARTON has her Number 51 and 52 5-inch mounts trained to starboard in anticipation of an aerial attack. She was built by Bath Iron Works and commissioned on 30 December 1943. (Naval Historical Center)

USS LAFFEY (DD-724) underwent a FRAM II Program 62 conversion in the early 1960s. The upgrade added a DASH helicopter hangar and reconfigured stack caps. The aluminum tripod mast is equipped with AN/SPS-49 air search and AN/SPS-10 surface search radar antennas, while various radio whip antennas are fitted to the turret and bridge areas. A Variable Depth Sonar (VDS) array is mounted on the fantail. LAFFEY was preserved as a memorial ship and can be visited at Patriots Point, Charleston, South Carolina. (US Navy)



BARTON served with Destroyer Squadron Thirty (DesRon 30) in the Atlantic in 1965. She is fitted with a reconfigured bridge and a tripod mast that supports the new AN/SPS-49 air search and AN/SPS-10 surface search radar antennas. Radar countermeasure and whip antennas are fitted to the aft stack. The DesRon 30 badge is fixed to the superstructure. (National Archives)

USS O'BRIEN (DD-725) underwent a FRAM II Program 61C upgrade in the early 1960s. Her radar configuration was updated with an AN/SPS-37 system, an improved version of the SC antenna. The after superstructure/DASH helicopter hangar has Electronic Countermeasures (ECM) radomes on a lattice type mast. O'BRIEN earned six Battle Stars for World War Two service, five for Korea, and three for Vietnam. (Naval Historical Center)





USS LYMAN K. SWENSON (DD-729) lies off the Boston Navy Yard in July of 1944, while camouflaged in Measure 32/9d. She was constructed by Bath Iron Works and commissioned on 2 May 1944. A Radio Direction Finder (RDF) antenna is placed on the forward part of the aft stack as a navigation aid. LYMAN K. SWENSON earned five Battle Stars for her World War Two service. (National Archives)



LYMAN K. SWENSON underwent a FRAM II Program 60C reconfiguration in the early 1960s. The conversion added AN/SPS-37 air search and AN/SPS-10 surface search radar antennas on the tripod foremast. This conversion also resulted in the beaching of the Number Three (Mount 53) 5-inch mount and the addition of a hangar for the DASH anti-submarine helicopter. LYMAN K. SWENSON was sold to Taiwan in 1974 and used as a parts hulk. (Naval Historical Center)



USS MEREDITH (DD-726) was commissioned on 14 March 1944 and served with the Atlantic Fleet. On 6 June 1944, as part of Force 'U', she escorted the Allied fleet for the invasion of Normandy. MEREDITH struck a sea mine that disabled her on 8 June 1944 and she was towed to the Bay of the Seine to be salvaged. The next day, German bombers attacked her with 2205 pound (1000 kg) bombs. This raid sank MEREDITH, which had been in commission less than three months. (Naval Historical Center)



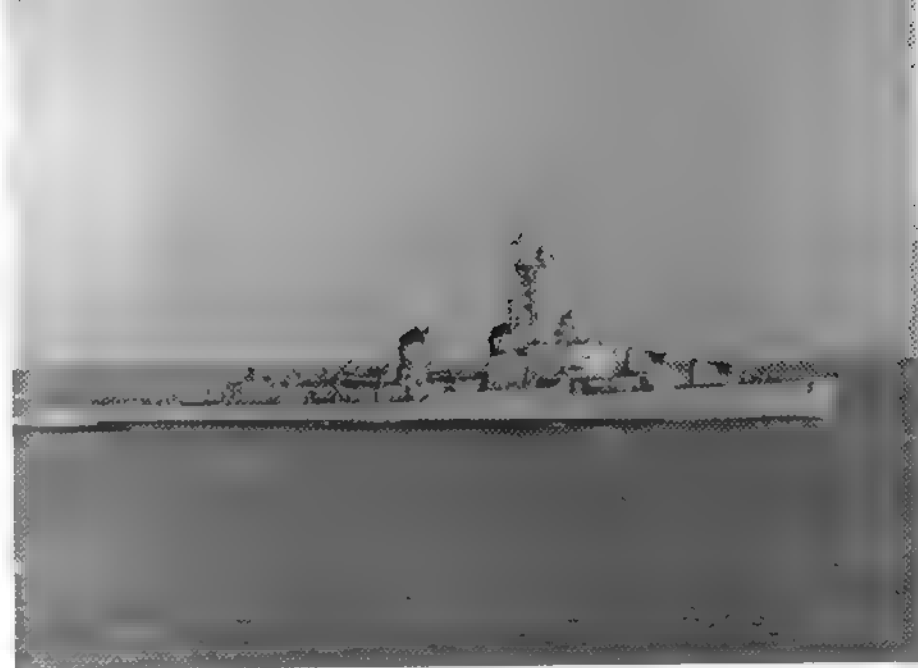
(Above) USS MADDOX (DD-731) slices neatly through the water on 28 January 1955 while flying the 'R' flag at the halyard. This flag was a signal during maneuvers. She carries AN/SPS-6 and AN/SPS-10 surface search radars atop her tripod foremast. The Mk 37 fire control director has been fitted with Mk 28 radar and various whip radio antenna are affixed to the aft stack. The Number Two (Mount 52) 5-inch gun mount lacks the blast bloomers that also protect against water intrusion. (National Archives)



(Above Right) On 2 August 1964, North Vietnamese Navy gunboats attacked MADDOX in the Gulf of Tonkin. Return gunfire sank one gunboat and damaged another. This skirmish at sea caused President Lyndon B. Johnson to escalate the war in Vietnam. MADDOX has AN/SPS-40 air search and AN/SPS-10 surface search radar antennas atop her tripod mast. She was awarded four Battle Stars for her World War Two service, six for Korea, and a Navy Unit Commendation for actions off North Vietnam. (Naval Historical Center)



(Right) USS HYMAN (DD-732) escorts a US Escort Carrier (CVE) in the Pacific in 1944. She is camouflaged in a weather beaten Measure 32/3d. Her SC air search, SG surface search, and Mk 37 fire control gun director radar antennas have been removed from the print by wartime censors, a usual practice. HYMAN is pulling alongside another ship to receive some fuel or deliver guard (classified) mail. (Real War Photo)



(Above Left) USS MANNERT L. ABELE (DD-733) cruises in the Pacific in 1944 camouflaged in Measure 32/11a. On 12 April 1945, she was struck by an Imperial Japanese Navy Zero *kamikaze* while operating off Okinawa. One minute later, a Yokosuka MXY7 Model 11 *Ohka* (Cherry Blossom) from the 721st *Kokutai* (Air Group) struck the damaged destroyer, sending her and 82 of her crew to the bottom. This marked the first sinking of an Allied ship by the *Ohka* piloted bomb, code named *Baka* by the Allies. MANNERT L. ABELE earned two Battle Stars for her service in the Pacific. (National Archives)



(Above) USS PURDY (DD-734), serving with Destroyer Division One Hundred Twenty-Two (DesDiv 122), returns to the United States from the Korean War zone in 1952. AN/SPS-6 air search and SG-6 surface search radar are atop the tripod foremast. PURDY still carries her Number One quintuple 21-inch torpedo tubes between the stacks. (National Archives)

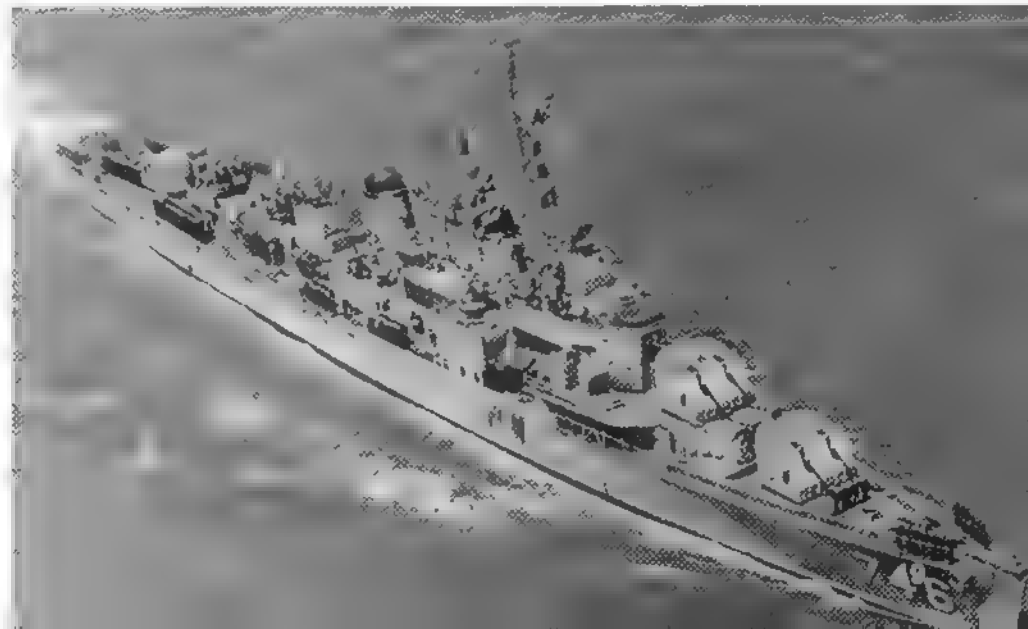
(Left) USS DREXLER (DD-741), recently completed by Bath Iron Works, conducts her builder's trials off Cape Elizabeth, Maine before heading to the Pacific War Zone via the Panama Canal. DREXLER has the later platform style bridge-work and is camouflaged in Measure 32/11a. On 28 May 1945, while operating as a radar picket off Okinawa, DREXLER was struck by two Japanese *kamikazes* in rapid succession. The resulting impacts caused her to roll over and sink, taking 158 officers and men to the bottom. (Real War Photos)

(Right) USS TAUSSIG (DD-746) is moored alongside the covered lighter YF-236 at Navy Yard, New York on 18 August 1944 loading torpedoes for the Number Two tubes. She is camouflaged in Measure 32/9d for her upcoming service in the Pacific. TAUSSIG carries SC-4 air search and SG surface search radars atop her foremast. In May of 1974, she was sold to Taiwan and renamed LO YANG (949), becoming the class leader. (Floating Drydock)

(Below) USS SAMUEL N. MOORE (DD-747) wore camouflage Measure 32/11a while serving in the Pacific in 1944. SC-4 air search and SG surface search radars are atop the foremast. She is armed with a pair of quad 40mm, a pair of twin 40mm, and ten single mount 20mm cannon, plus two five-tube 21-inch torpedo mounts. SAMUEL N. MOORE was sold to Taiwan in December of 1969 and renamed HENG YANG (978). (Real War Photos)



TAUSSIG's men assemble on the decks by division to 'man the rails' in the early 1950s. She still carries her Number One 21-inch torpedo mount between the stacks, but her twin and quad 40mm guns have been replaced by twin mount 3-inch (76mm) Mk 27 guns. TAUSSIG's hull (pennant) number has been repeated atop her Number Two (Mount 52) Mk 32 5-inch gun mount. Her call sign NHIG identification flags flutter at her halyards. (National Archives)





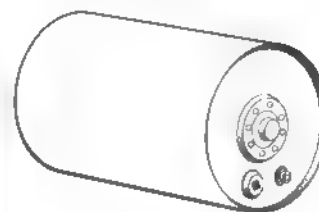
USS JOHN R. PIERCE (DD-753) cuts through the water during the Korean War (1950-1953) era. Her black boot topping is quite evident indicating a low fuel state as she pulls up for replenishment. She carries AN/SPS-6 surface search and SG-6 air search radar atop her tripod mast. ECM antennas are fitted to the aft stack as a radar countermeasure. (National Archives)

USS JOHN A BOLE (DD-755) enters a harbor channel in the early 1950s with her boarding ladder deployed to take aboard the harbor pilot. SG-6 and AN/SPS-6 air search radar antennas are atop the tripod foremast. A Mk 28 radar antenna has replaced the former Mk 22 radar array atop the Mk 37 fire control director. An early ECM antenna is fitted to the aft stack. (National Archives)

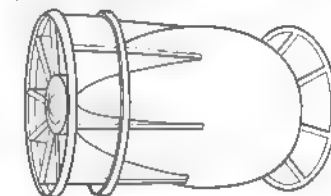


USS FRANK E. EVANS (DD-754) is at sea during April of 1963 following her FRAM II Program 61C upgrade. She was fitted with AN/SPS-37 air search and AN/SPS-10 surface search radar atop her tripod foremast. FRANK E. EVANS was struck and cut in two by the Australian aircraft carrier MELBOURNE (R 21) on 2 June 1969. The bow section sank in two minutes with the loss of 74 of her 273 crewmembers. (US Navy)

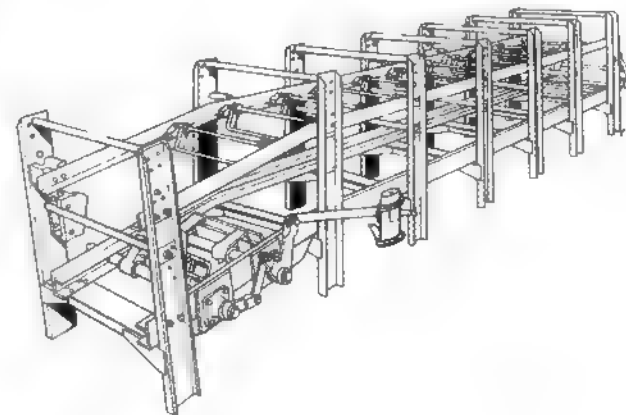
Mk 6 Depth Charge



Mk 9 Depth Charge (Fast Sinking)



Mk 9 Roller Track





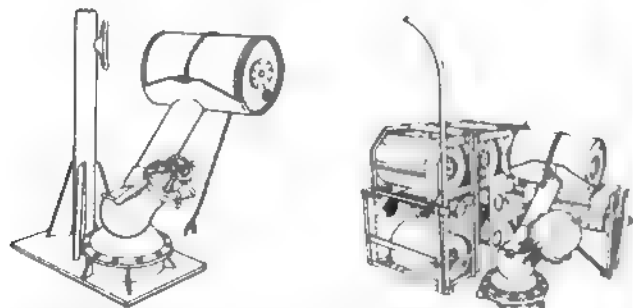
USS STRONG (DD-758) carried an AN/SPS-6 air search and SG-6 surface search radar atop the new tripod mast during the Korean War era. She has also been fitted with twin 3-inch radar directed guns in place of the quad 40mm cannon. Mk 11 Hedgehogs flank the conning tower area on Deck Level One. STRONG was sold to Brazil in October of 1973 and renamed GRANDE DEL NORTE (D.37). (Naval Historical Center)



With her Jack at half-staff to honor the death of President Franklin D. Roosevelt, USS BEATTY (DD-756) prepares to dock at Bethlehem Shipbuilding, San Pedro, California in April of 1945. She is camouflaged in Measure 21, the Navy Blue System. SC-4 air search and SG surface search radar are atop her pole foremast. BEATTY was sold to Venezuela in July of 1972 and renamed CARABOBO (D 21). (Naval Historical Center)

Mk 6 K-Gun

Roller Rack



USS JOHN W. THOMASON (DD-760) sails out of San Diego, California following her FRAM II Program 59C upgrade in the 1960s. She was the lead ship in this program phase and is fitted with AN/SPS-40 air search and AN/SPS-10 surface search radar at the foremast. The helicopter hanger deck is festooned with various ECM antennas and she carries VDS gear on her fantail. In February of 1974, JOHN W. THOMASON was sold to Taiwan and renamed NAN YANG (954). (US Navy)





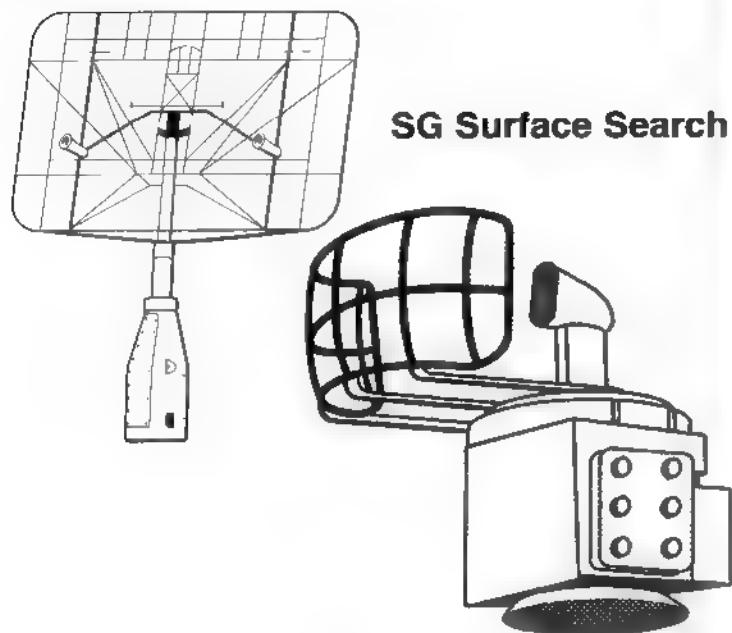
(Above Left) USS BUCK (DD-761) cruises off the Korean coast in 1952. She is fitted with AN/SPS-6 air search and SG-6 surface search radar antennas on her aluminum tripod foremast. A Mk 28 dish-type radar antenna has replaced the earlier Mk 12 and Mk 22 radar antennas on the Mk 37 gun director. Electronic Countermeasures (ECM) antennas are fitted to the aft stack. BUCK was sold to Brazil in July of 1973 and renamed ALAGAOS (D.36). (Naval Historical Center)

(Above) USS JAMES C. OWENS (DD-776) operated with Task Force 77 off the coast of Korea in 1952. She is still fitted with the Mk 14 quintuple 21-inch torpedo tubes between the two stacks; however, 3-inch guns have replaced the 40mm Bofors cannon. AN/SPS-6 air search and SG-6 surface search radar is atop the aluminum tripod mast. She was sold to Brazil and renamed SERGIPE (D.35) in July of 1973. (Naval Historical Center)

(Left) JAMES C. OWENS pulls up along side the heavy cruiser USS NEWPORT NEWS (CA-148) to demonstrate underway refueling to the embarked Commander Sixth Fleet (ComSixFleet). NEWPORT NEWS was flagship of the US Second Fleet in the Mediterranean. JAMES C. OWENS underwent FRAM II Program 62 conversion in the early 1960s. AN/SPS-40 air search and AN/SPS-10 surface search radar are fitted to the tripod foremast, while ECM radomes are located atop the DASH helicopter hangar. Various whip radio antennas are placed on the gun mounts, stacks, and after superstructure. (Robert B. Shirley)

World War Two Radar Antennas

SA Air Search



SG Surface Search



JAMES C. OWENS wore Measure 27, the 'peace time' Haze Gray System while operating off Korea in 1952. The 3-inch guns and the associated radar controlled gun director are placed on the aft superstructure on Deck Level One. AN/SPS-6 air search and SG-6 surface search radar are fitted to the tripod foremast. Her call sign NHKE signal flags fly from the port side halyards. (Naval Historical Center)

USS ZELLARS (DD-777) was the first of five ALLEN M. SUMNER Class destroyers to be commissioned out of Todd Pacific Shipbuilding. The 'triple seven' underwent FRAM II Program 60C reconfiguration in the early 1960s and emerged with a DASH helicopter hangar, modified stacks, and AN/SPS-37 air search and AN/SPS-10 surface search radar. ZELLARS was awarded one Battle Star for her World War Two service and four for Korea. (Naval Historical Center)

US Navy Destroyer Colors, 1944-1970

(FS numbers were developed after World War Two and their use here is solely an approximation.)

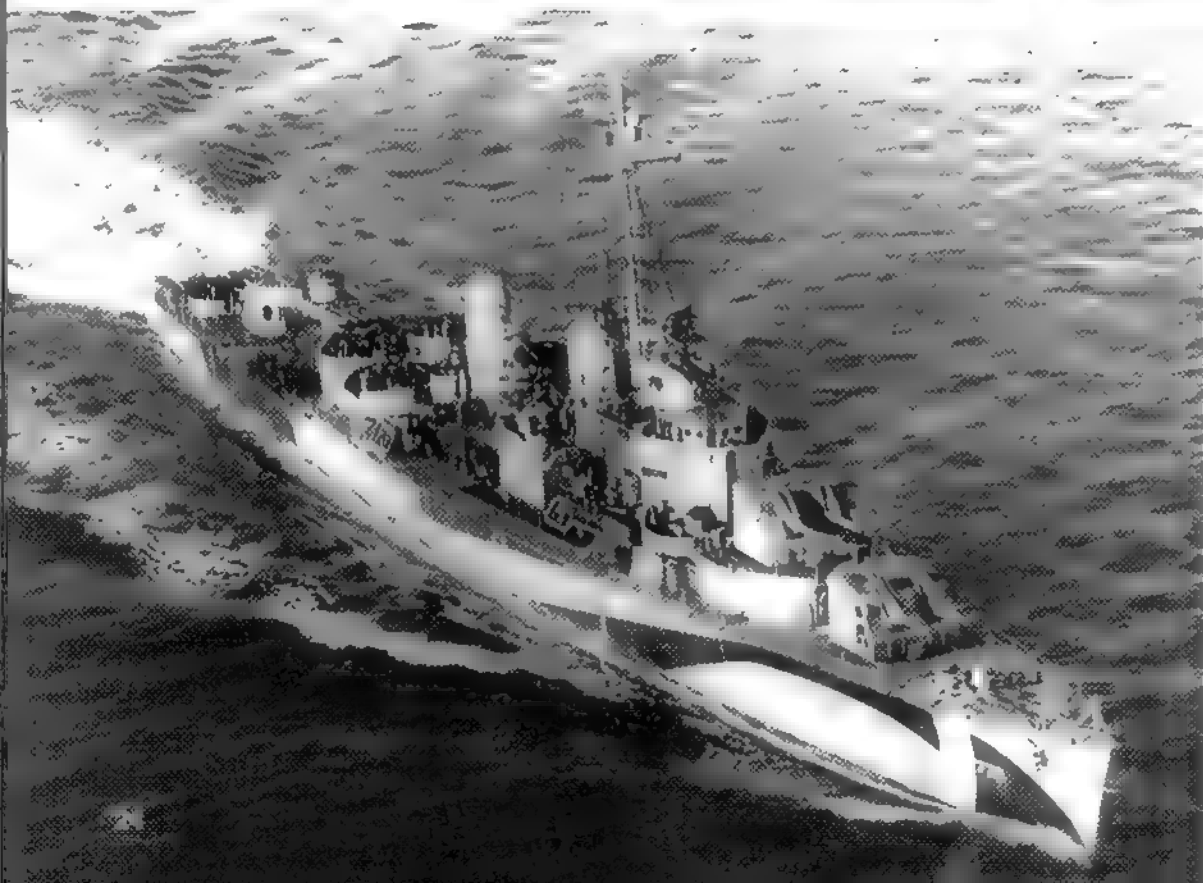
Color Name	Approx. FS No.	Measures Used
Deck Blue (20-B)	35042	For Decks & Other Horizontal Surfaces
Navy Blue (5-N)	35044	21, 22
Sea Blue (5-S)	35045	12
Ocean Gray (5-O)	35164	12, 31, 32
Haze Gray (5-H)	35237	12, 22, 31,
Pale Gray (5-P)	35526	33
Light Gray (5-L)	36320	32
Dull Black (#82, later BK)	37040	31, 32
White (5-U)	37855	22





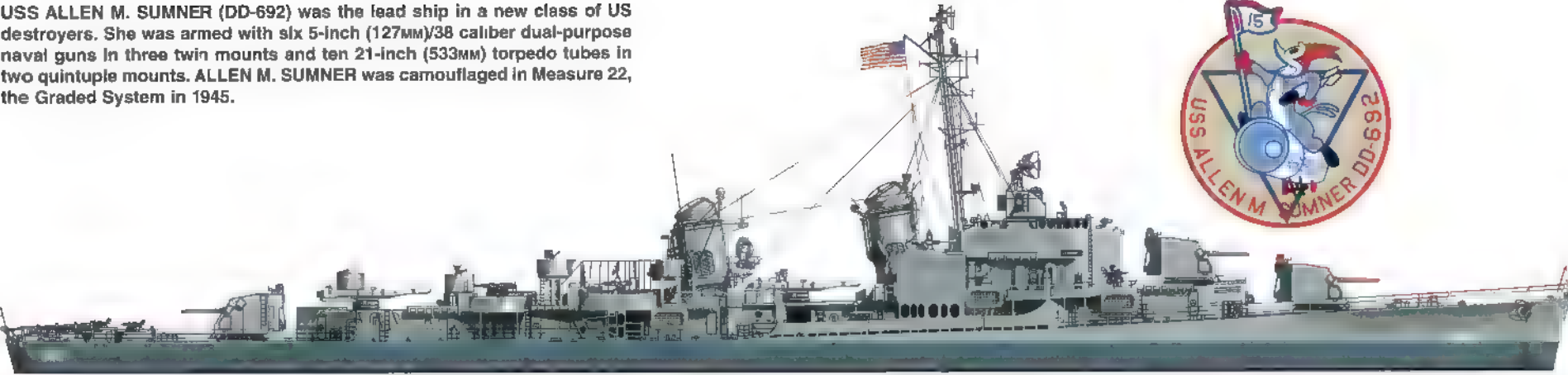
(Above Left) USS ROBERT K. HUNTINGTON (DD-781) cuts through calm water while operating with Destroyer Squadron Fourteen (DesRon 14) in the late 1960s. She underwent FRAM II Program 60C in the early 1960s, emerging with a DASH helicopter hangar and AN/SPS-37 air search and AN/SPS-10 surface search radars atop her tripod foremast. Variable Depth Sonar (VDS) gear is on the fantail; a part of her vast Anti-Submarine Warfare (ASW) systems that included Mk 11 Hedgehog projectors, Mk 32 torpedo tubes, and SQS-29 long-range sonar. (Real War Photos)

(Above) USS BRISTOL (DD-857) was the last ship constructed in the ALLEN M. SUMNER Class. She is camouflaged in the Graded System of Measure 22. BRISTOL was completed by Bethlehem, San Pedro, California and commissioned on 17 March 1945 – too late to see service in the Pacific during World War Two. She was sold to Taiwan in December of 1969 and renamed HUA YANG (988). (Floating Drydock)

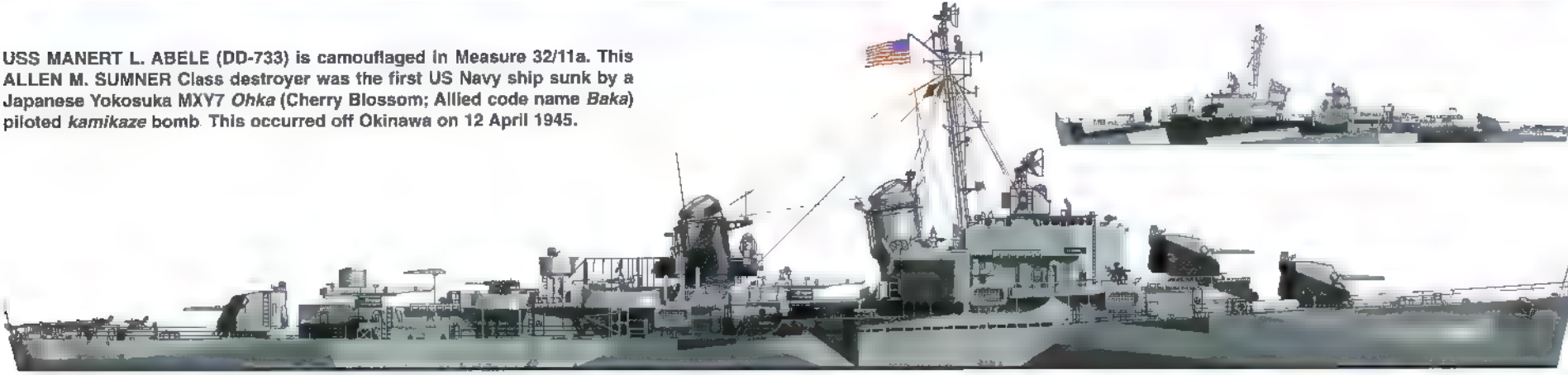


(Left) USS MASSEY (DD-778) was camouflaged in Measure 31/25d while operating in the Pacific in late 1944. She carries two quintuple 21-inch torpedo mounts – one between the stacks and the other on the aft superstructure. MASSEY is further armed with twelve 40mm anti-aircraft guns in three quad mounts and ten 20mm cannon in single mounts. A wind-break has been erected atop the Number Two (Mount 52) 5-inch/38 mount to shield the bridge from the wind. SC-4 air search and SG surface search radar antennas are mounted atop the pole foremast. (Floating Drydock)

USS ALLEN M. SUMNER (DD-692) was the lead ship in a new class of US destroyers. She was armed with six 5-inch (127mm)/38 caliber dual-purpose naval guns in three twin mounts and ten 21-inch (533mm) torpedo tubes in two quintuple mounts. ALLEN M. SUMNER was camouflaged in Measure 22, the Graded System in 1945.



USS MANERT L. ABELE (DD-733) is camouflaged in Measure 32/11a. This ALLEN M. SUMNER Class destroyer was the first US Navy ship sunk by a Japanese Yokosuka MXY7 Ohka (Cherry Blossom; Allied code name Baka) piloted kamikaze bomb. This occurred off Okinawa on 12 April 1945.



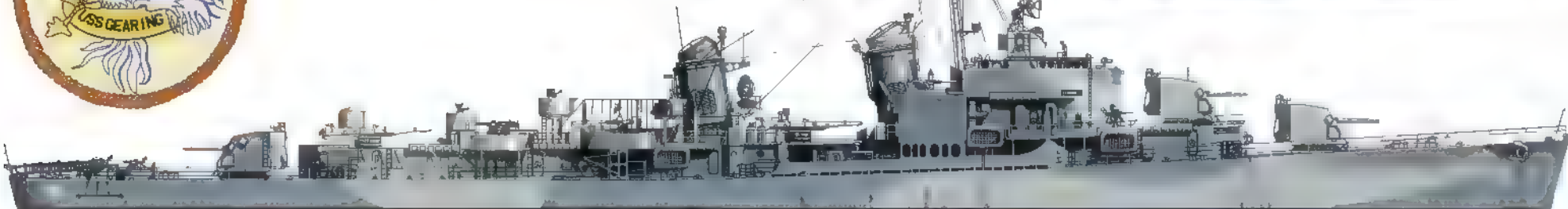
USS MADDOX (DD-731) sank a North Vietnamese gunboat during the Tonkin Gulf Incident on 2 August 1964. This action is credited with escalating the war in Vietnam. MADDOX was assigned to Destroyer Squadron Nineteen (DesRon 19) and was camouflaged in Measure 27, the Haze Gray System in 1964.



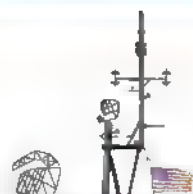
USS AARON WARD (DM-34) was the former DD-773 that was converted to a Destroyer Minelayer (DM) in 1944. She served with Mine Squadron Three, Mine Division Nine in the Pacific. Four *kamikazes* struck AARON WARD while she served as a radar picket in 1945. This attack left her a floating hulk. AARON WARD is camouflaged in Measure 21, the Navy Blue System



USS GEARING (DD-710) was the class leader of the largest destroyers built by the US Navy during World War Two. She was camouflaged in Measure 33a/28d in 1945. GEARING was commissioned on 3 May 1945 – too late to see service during the war.



USS GYATT (DDG-1) was the ex-DD-712 that was converted to the first US Navy destroyer to be armed with Surface-to-Air Missiles (SAMs). The RIM-2 Terrier missile launcher system was installed in 1956 and it replaced the Number Three 5-inch/38 dual mount. GYATT was camouflaged in Measure 27, the Haze Gray System.



GEARING Class

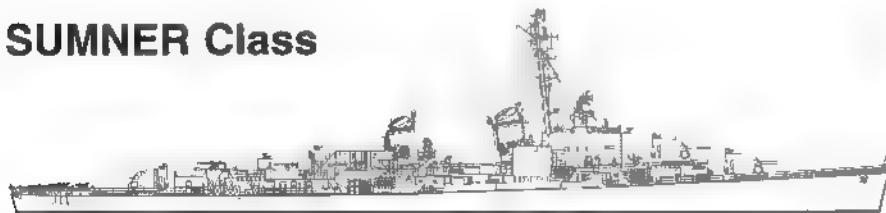
The GEARING Class was developed directly from the ALLEN M. SUMNER Class, when a 14-foot (4.3 m) hull plug was inserted between the two stacks for additional fuel oil storage to increase the range. The GEARING Class was then generally known as the 'long hulls,' while the ALLEN M. SUMNER Class were known as the 'short hulls.'

The GEARING Class was 390 feet 6 inches (119 m) in overall length and 383 feet (116.7 m) at the waterline. This compares to the SUMNERS' 376 foot 6 inch (114.8 m) overall and 369 foot (112.5 m) waterline lengths. The beam was 40 feet 6 inches (12.3 m) – four inches (10.2 cm) narrower than the SUMNER Class' 40 foot 10 inch (12.4 m) beam. Draft was rated at 12 feet 6 inches (3.8 m) standard and up to 14 feet (4.3 m) at full war load. The SUMNERS had draft ratings of 14 feet 5 inches (4.4 m) standard and 15 feet 8 inches (4.8 m) at full war load. Displacement for the GEARING Class was 2425 tons (2464 MT) standard and 3480 tons (3536 MT) at full war load. The GEARINGS' fuel capacity of 560 tons (569 MT) – a 160-ton (163 MT) increase over the SUMNERS' 400-ton (406 MT) capacity – provided for a range of 6000 nautical miles (6909 miles/11,119 km) at a speed of 15 knots (17 MPH/28 KMH).

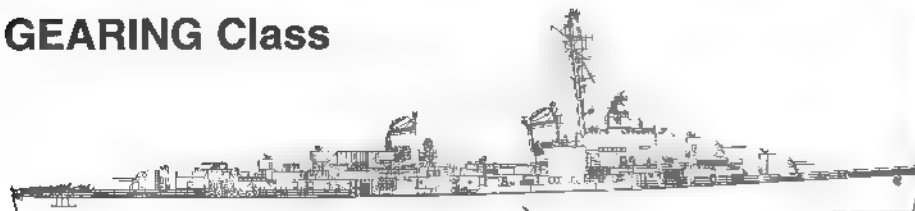
The GEARING Class was powered by either Babcock & Wilcox or Foster-Wheeler boilers operating at 615 PSI and 815° Fahrenheit (435° Celsius). The resulting super-heated steam turned either General Electric or Westinghouse geared turbines. USS GEARING (DD-710) was powered by Babcock & Wilcox boilers that provided 60,000 SHP to the geared Westinghouse turbines. In light condition, the rated speed was 36 knots (41 MPH/67 KMH) and 32 knots (37 MPH/59 KMH) at full load. This was a typical performance for the class. The experimental USS TIMMERMAN (DD-828) was fitted with lightweight boiler equipment rated at 100,000 HP and feeding high pressure steam to a Westinghouse geared turbine on the starboard side and a General Electric geared turbine on the port side. Using this experimental equipment, TIMMERMAN had a speed of 43 knots (50 MPH/80 KMH). The equipment installed in the TIMMERMAN was originally intended for the cancelled PERCIVAL (DD-452).

Since the GEARINGS were largely a modified SUMNER Class DD, their weapons and electronics suites were generally identical. The GEARINGS' main battery consisted of six dual-

SUMNER Class



GEARING Class



14-Foot (4.3 m)
Hull Plug



USS GEARING (DD-710) was the lead ship in the new class of stretched SUMNERS. Here, she undergoes inclining tests dockside at her builder's (Federal Shipbuilding & Drydock, Port Newark, New Jersey) dock on 25 April 1945. (Inclining tests are used to determine a ship's stability baseline, center of gravity, and current weight.) GEARING is camouflaged in Measure 22, the Graded System. All of her 20mm cannon are covered with canvas and stored in a near vertical position. SC air search and SG surface search radars are fitted to the pole foremast. (Floating Drydock)

GEARING breaks out to sea following her commissioning on 3 May 1945. The Mk 37 gun director is working in conjunction with the Number Three 5-inch (Mount 53) gun mount, both pointing to starboard (90° off the bow). GEARING carries the latest anti-kamikaze armament of six 5-inch (127mm) guns in three mounts, twelve 40mm cannon, and eleven 20mm cannon. She still carries a single quintuple 21-inch (533mm) Mk 14 torpedo launcher between the stacks. (Naval Historical Center)





USS GEARING refuels from the heavy cruiser USS NEWPORT NEWS (CA-148) sometime during the 1950s. NEWPORT NEWS was the flagship of the Sixth Fleet in the Mediterranean. GEARING has upgraded electronics and radar equipment with Mk 28 radar atop the Mk 37 gun director, plus AN/SPS-6 air search radar and AN/SPS-10 surface search radar atop her newly installed tripod foremast. (Real War Photos)



purpose 5-inch (127MM)/38 caliber guns mounted in three Mk 32 turrets, two forward and one aft.

The secondary armament amounted to twelve 40MM Bofors anti aircraft cannon in two quad mounts and two twin mounts. Eleven 20MM Oerlikon cannon in single mounts were also carried. This combination was considered the ultimate in anti-aircraft defense for the destroyers. Technological advances caused the 40MM guns to be replaced by rapid-firing, radar controlled 3-inch (76MM) guns in the early 1950s. The 20MM cannon were generally useless against fast jets or high-flying aircraft and were consequently beached by the mid-1950s.

A few GEARINGS were originally fitted with two quintuple 21 inch (533MM) torpedo tubes, but eventually all had their Number Two tubes removed in favor of additional 20MM and 40MM anti aircraft weapons. Many GEARINGS still carried the torpedo tubes between the stacks during the Korean War (1950-1953).

Anti-Submarine Warfare (ASW) weapons consisted of two depth charge roller tracks on the fantail and six Mk 6 K-guns – three each mounted on the port and starboard quarter. Like the SUMNERS, the GEARINGS employed the Mk 6 'ash can' and Mk 9 or Mk 14 'fast sinking' depth charges.

The GEARINGS' electronic arrays were also identical, consisting of SC or SA air search radars and SG surface search radars. The radar suite was upgraded with SPS-6 air search and AN/SPS-10 surface search radars during the Korean War era. SPS-29, -37, -40, or -49 air search radars were fitted along with the AN/SPS-10 surface search radar set during the Fleet Rehabilitation and Modernization (FRAM) Mk I Program in the 1960s. The sonar system consisted of the SQS-4 mounted in the hull bottom. Twenty-four of the GEARING Class were converted to radar picket ships by 1949. These vessels were fitted with an SPS-8 height finding radar and reclassified as DDR. The SPS-8 height finding radar worked in conjunction with either the SA or SC air search radar antennas. The combination provided range, bearing, and height information to improve both air defense and fighter direction efforts. The DDRs extended the 'electronic eyes' of their task force and were used to increase US coastal radar range beyond the reach of shore-based radars.

Five GEARING Class destroyers were completed, commissioned, and completed work up for combat to see service in World War Two. USS FRANK KNOX (DD-742), USS SOUTHERLAND (DD-743), USS CHEVALIER (DD-805), USS HIGBEE (DD-806), and USS BENNER (DD-807) all served in the Pacific and earned one Battle Star for their respective flags. All served in the Korean War earning additional Battle Stars and all had undergone conversion to radar picket ship (DDR).

The GEARING Class was supplied to several foreign countries under the Military Assistance Program (MAP), with the Taiwanese Navy receiving the bulk of the aging FRAM I and FRAM II destroyers beginning in 1973. All were placed in the CHAO YANG Class and most if not all have since been stricken from the commissioned lists.

A total of 97 GEARING Class ships were built during and after World War Two. USS TIMMERMAN (DD-828) was the last unit to be commissioned in 1951.

GEARING begins an Atlantic Anti-Submarine Warfare (ASW) exercise with a Grumman S2F (later S-2) Tracker and a US Navy nuclear attack submarine. GEARING underwent a FRAM I Program D62 upgrade in the early 1960s. The program exchanged her Number Two 5-inch (Mount 52) gun mount for a pair of Mk 32 torpedo tubes, while an ASROC launcher and control station now occupies the space between the stacks. A DASH helicopter hangar and launching and landing pad finish out Deck Level One. AN/SPS-40 air search and AN/SPS-10 surface search radar are fitted to the tripod foremast. (National Archives, BuShips)



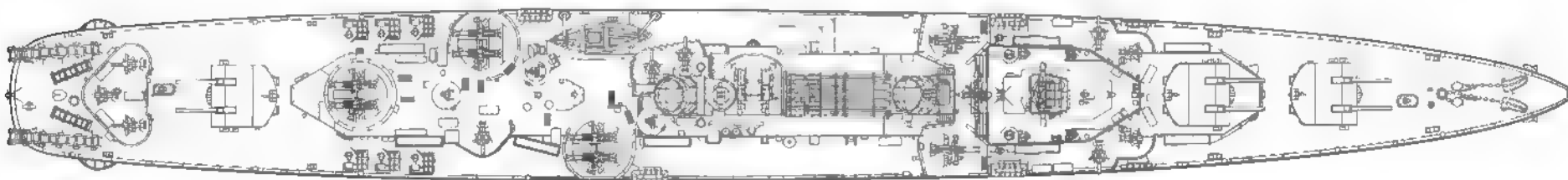
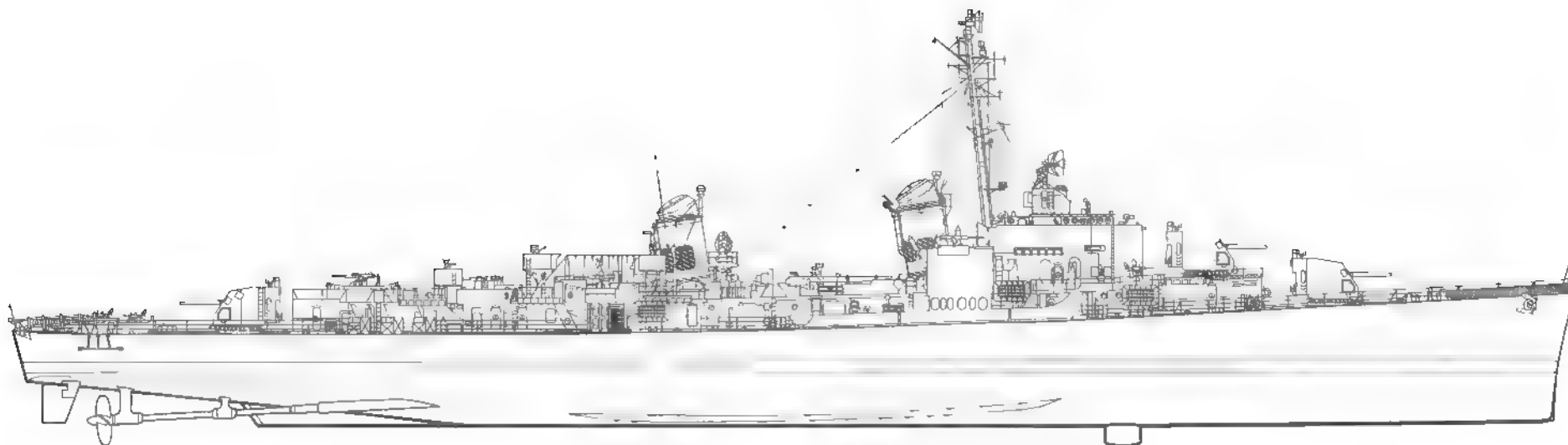
USS KENNETH D. BAILEY (DD-713) was converted to a radar picket ship in the early 1950s and joined the Atlantic Active Fleet. She underwent further conversion in 1959 during the FRAM II Program 60C, but retained her TACAN gear and all of her 5-inch guns. AN/SPS-37 air search and AN/SPS-10 surface search radar sits atop the tripod foremast. KENNETH D. BAILEY was sold to Iran in January of 1975 and cannibalized for parts. (Naval Historical Center)

(Above) USS EUGENE A. GREENE (DD-711) was reconfigured as a radar picket ship in 1952 and reclassified as DDR-711. She is fitted with SPS height finding radar atop the van on her aft superstructure and TACTical Air Navigation (TACAN) System gear on her tripod main mast just forward her Number Two stack. AN/SPS-40 air search and AN/SPS-10 surface search radars are fitted to the tripod foremast. EUGENE A. GREENE was sold to Spain in August of 1972 and renamed CHURRUCA (D 51). (National Archives)

Captain John Paul Jones once said, "Give me a fast ship, as I intend to sail in harm's way." The ALLEN M. SUMNER and GEARING Classes epitomized that

(Right) USS GYATT (DD-712) operates in the North Atlantic Ocean in 1949 – still camouflaged in her World War Two Measure 22, Graded System paint scheme. The retention of this scheme was unusual since most DDs, and the balance of the fleet, was painted in Measure 27, Haze Gray. GYATT was converted to a guided missile destroyer and reclassified as DDG-1 in December of 1955. The foremast top is occupied by an SC-5 air search radar. (Floating Drydock)



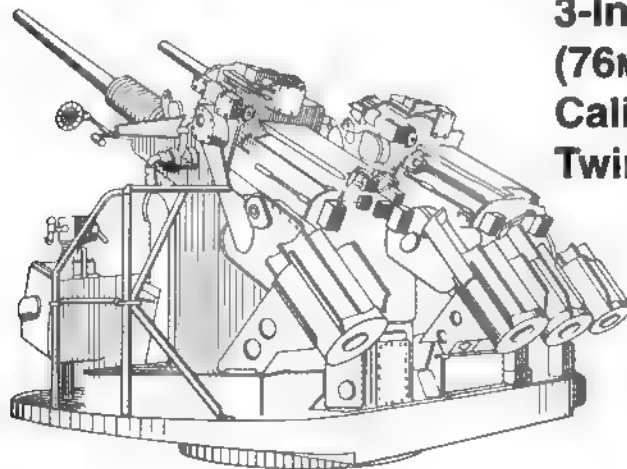


USS GEARING (DD-710) Specifications, 1945

Overall Length:.....	390 feet 6 inches (119 m)	Range:.....	6000 nautical miles (6909 miles/11,119 km) at 15 knots (17 MPH/28 kmh)
Beam:.....	40 feet 6 inches (12.3 m)	Complement:.....	367
Draft:.....	14 feet (4.3 m)	Armament:.....	Six 5-inch (127mm)/38 caliber guns in three twin mounts; twelve 40mm cannon in two quad and two twin mounts; eleven 20mm cannon in single mounts; and ten 21-inch (533mm) torpedo tubes in two quintuple mounts
Standard Displacement:..	2425 tons (2464 mt)		
Full Load Displacement:	3480 tons (3536 mt)		
Machinery:.....	Four Babcock & Wilcox boilers; two Westinghouse geared turbines generating 60,000 SHP; two screws.		
Speed:.....	36 knots (41 MPH/67 kmh)		



USS WILLIAM R. RUSH (DD-714) was one of 36 GEARING Class DDs that were converted to radar pickets. The foremast extension mounts an AN/SPS-37 air search radar on the forward platform and an AN/SPS-10 surface search radar antenna atop the mast. A TACAN radome sits atop the tripod main mast just forward the aft stack. An AN/SPS-8 height finder antenna is atop the van on the aft superstructure. (National Archives)



**3-Inch
(76mm)/50
Caliber Mk 33
Twin Mount**

Muzzle Velocity:.....2650 feet (808 m) per second
Maximum Range:...14,041 yards (12,839 m) at 45° elevation; 29,367 feet (8951 m) at 85° elevation
Rate of Fire:.....50 rounds per minute



USS FRANK KNOX (DD-742) makes a 360° turn following a high-speed run in less than calm seas. The TACAN-equipped destroyer was one of five GEARING Class ships to see service in World War Two. She earned her one Battle Star in World War Two and five Battle Stars for her Korean War service. Her fantail contains Variable Depth Sonar (VDS) as part of her ASW gear. FRANK KNOX was sold to Greece in January of 1971 and renamed THEMISTOCLES (D 210). (Naval Historical Center)

USS HAMNER (DD-718) underwent conversion to the FRAM I, Group B Program D62, Tall Mast configuration in the early 1960s. The conversion included the installation of two triple Mk 32 torpedo tubes in place of the Number Two (Mount 52) 5-inch mount, adding an ASROC launcher between the stacks, and a DASH helicopter hangar and electronic mast on the aft superstructure. AN/SPS-40 air search and AN/SPS-10 surface radars are atop the foremast. (Naval Historical Center)





USS SOUTHERLAND (DD-743) was converted to a Radar Picket Destroyer and outfitted with SPS height finding radar on the aft superstructure and ECM antennas on the aft stack. The pole foremast was replaced by a lighter weight aluminum tripod mast and fitted with AN/SPS-6 air search and AN/SPS-10 surface search radars. A pair of Mk 11 Hedgehog ASW launchers was placed to either side of the bridge superstructure. SOUTHERLAND earned one Battle Star for her World War Two service. (Naval Historical Center)

USS GURKE (DD-783) still carried both quintuple torpedo tubes during the Korean War era, but twin 3-inch guns had replaced all of the 40mm Bofors mounts. Mk 28 radar has replaced the Mk 12 and Mk 22 radars on the Mk 37 gun director. Her single pole foremast contains SC-5 air search and SG surface search radar. GURKE's hull number 783 has been painted on the Number One Mount and an American Flag has been painted atop the Number Two mount for identification during the Korean War. (Naval Historical Center)



USS ROWAN (DD-782) was commissioned 31 March 1945 out of Todd Shipyards, Seattle, Washington – too late to see service in World War Two. Nevertheless, she earned four Battle Stars for Korea and eleven for her service off Vietnam. She carries AN/SPS-6 air search and SG-6 surface search radars on the tripod foremast and an open Hedgehog launcher is visible to the left of the Number Two 5-inch mount. ROWAN was sold to Taiwan in 1977, renamed CHAO YANG, and cannibalized for parts. (Naval Historical Center)

A QH-60 DASH ASW helicopter sits on the landing area of USS RICHARD B. ANDERSON (DD-786) just before an Anti-Submarine Warfare (ASW) exercise in the late 1960s. RICHARD B. ANDERSON underwent a FRAM I, Group A Program D60C upgrade in the early 1960s. That upgrade removed the Number Three (Mount 53) mount and added an ASROC launcher between the stacks. Optimized for ASW operations, her sole air defense capability rested with the two forward 5-inch mounts. RICHARD B. ANDERSON was sold to Taiwan in June of 1977 and renamed KAI YANG (915). (Naval Historical Center)

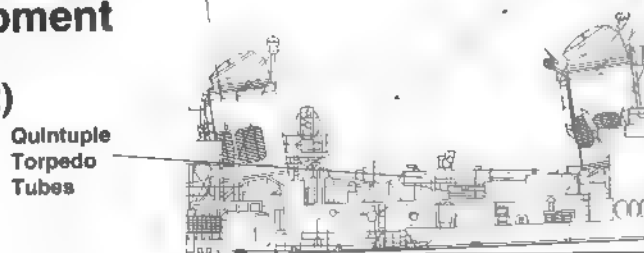




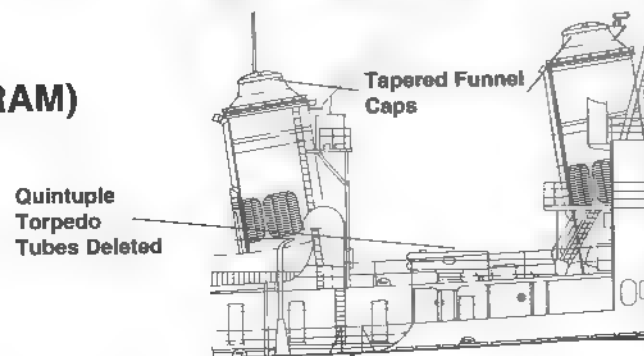
USS JAMES E. KEYES (DD-787) sails out of San Diego, California harbor in the late 1960s carrying the FRAM I, Group B Program D62 Tall Mast. AN/SPS-40 air search and AN/SPS-10 surface search radars are fitted to the tripod foremast. She also carries the Mk 32 torpedo tubes forward and an ASROC launcher amidships. JAMES E. KEYES was sold to Taiwan in April of 1973 and renamed CHIEN YANG (912) and placed in the CHAO YANG Class. She was further upgraded during the *Wu Chin II* air defense program. (National Archives)

GEARING Class Stack Cap Development

1945 (As Built)



1961 (Post-FRAM)



USS HOLLISTER (DD-788) enters San Diego, California harbor during the Korean War era in the early 1950s. She has an upgraded radar suite in the form of AN/SPS-6 air search and AN/SPS-10 surface search antennas on a tripod mast. Rapid-fire 3-inch guns have replaced the 40mm Bofors cannon and Mk 63 fire control has been added to increase accuracy of the new guns. HOLLISTER was sold to Taiwan in March of 1983 and renamed SHAO YANG (929). (Naval Historical Center)

USS CHEVALIER (DD-805) was one of five GEARING Class DDs to see service during World War Two, where she earned one Battle Star. CHEVALIER was converted to a radar picket destroyer in March of 1949 and reclassified as a DDR. Her hull number (805) has been painted atop her Number One (Mount 51) mount for identification during the Korean War, where she earned nine Battle Stars for her service. CHEVALIER underwent FRAM II Program R62 and was fitted with a DASH helicopter, but not the ASROC System. She was sold to South Korea in 1972 and renamed CHUNG BUK (915). (Naval Historical Center)





USS BENNER (DD-807) was outfitted as a radar picket destroyer and reclassified as a DDR in 1949. BENNER is configured with rapid-fire 3-inch guns in place of the 40mm cannon. She has TACAN antennas on a tripod mast and an AN/SPS-8 height finding radar array aft the Number Two stack. An additional electronics van is placed between the stacks. AN/SPS-37 air search and AN/SPS-10 surface search radar antennas are fitted on the tripod foremast. Only one depth charge roller rack is fitted to the stern. (Naval Historical Center)



USS RICH's (DD-820) 26-foot (7.9 m) motor launch is used to ferry her crewmembers to and from shore leave. RICH underwent FRAM I, Group B Program E63 Tall Mast conversion in the early 1960s and became part of the BASILONE (DDE-824) Class. The tripod foremast mounts AN/SPS-40 air search and AN/SPS-10 surface search radar antennas, while additional antennas are mounted on the aft superstructure atop the DASH ASW helicopter hangar. A Mk 112 ASROC launcher is fitted between the capped stacks. (Naval Historical Center)



USS CARPENTER (DD-825) underwent a FRAM I, Group B Program E64 refit that eliminated the Number Two and Three 5-inch mounts (Mounts 52 and 53). A pair of Mk 32 triple torpedo tubes are in place of the 5-inch Mount 52 on Deck Level One. A Mk 112 ASROC launcher and control station was mounted between the stacks. An Engineering 'E' is painted on the fore stack and both stacks have a black identification stripe painted on them. (Naval Historical Center)

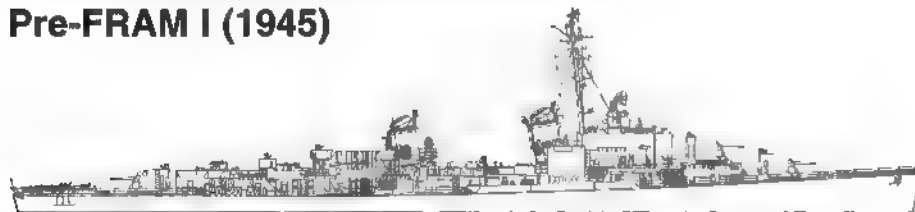


USS ROBERT A. OWENS (DDE-827) was completed in 1949 and designated as Hunter-Killer (DDK) and armed with four of the 3-inch/50 guns in twin mounts – one forward and one aft. The main armament was changed to the 3-inch/70 in the unusual 'frog eye' mounts in 1957. Additionally, both ROBERT A. OWENS and her sister CARPENTER (DDE-825) were fitted with a new, box-like bridge structure. The Mk 108 Mark Able ASW weapon system was also fitted both fore and aft. She was sold to Turkey in February of 1982 and renamed ALCITEPE (D 346). (Naval Historical Center)

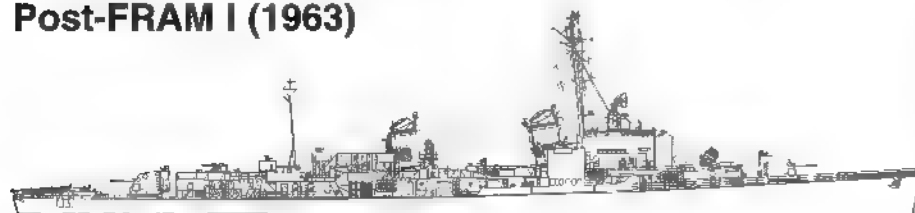


On 11 May 1962, USS AGERHOLM (DD-826) became the first and only US destroyer to launch an ASROC ASW rocket-boosted nuclear depth charge. This test (SWORDFISH) of Operation DOMINIC occurred in the Pacific Ocean. This ASROC was designed to thwart the Soviet era ballistic missile and attack submarine threat. AGERHOLM is configured with the FRAM I, Group A Program D60C conversion that eliminated the Number Three (Mount 53) 5-inch gun mount. AN/SPS-29 air search and AN/SPS-10 surface search radar antennas are atop the tripod foremast. (Naval Historical Center)

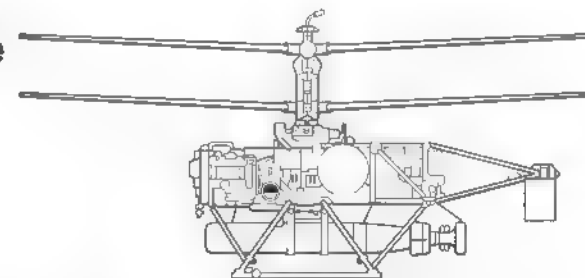
GEARING Class Development Pre-FRAM I (1945)



Post-FRAM I (1963)



QH-50C Drone Anti-Submarine Helicopter (DASH)



Gyrodyne QH-50C DASH Specifications

Rotor Diameter:.....20 feet (6.1 m)
Overall Length:.....13 feet 1 inch (4 m)
Gross Weight:.....2296 pounds (1041 kg)
Powerplant:.....One 270 HP Boeing T50-BO-4 turboshaft engine
Armament:.....Two 12.75 Inch (324mm) Mk 46 torpedoes under fuselage
Performance:
Maximum Speed:..78 knots (90 MPH/145 kmh)
Service Ceiling:.....16,500 feet (5029 m)
Range:.....60 nautical miles (69 miles/111 km)
Crew:.....One (remote operation aboard ship)



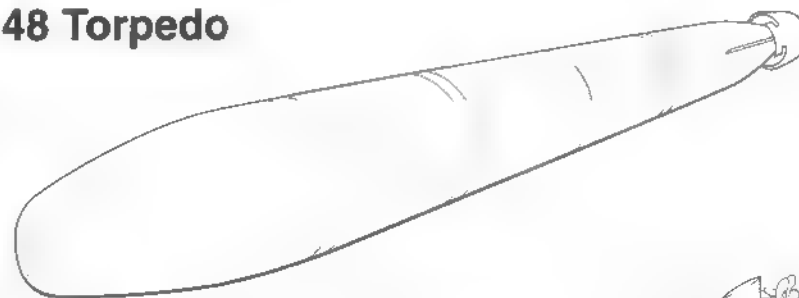
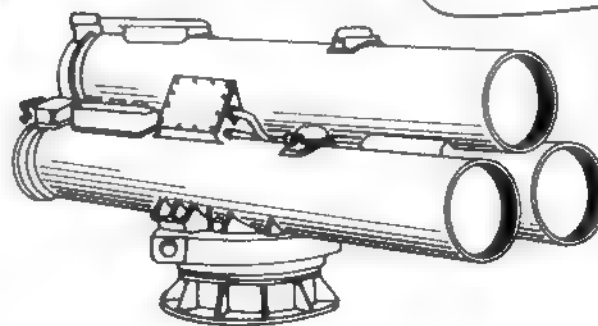
USS CARPENTER (DDE-825) was utilized as a test ship for the NORFOLK (DL-1) Class Destroyer Leaders. CARPENTER was used to test the 3-inch (76mm)/70 Mk 23 rapid-fire cannon. The Mk 108 Mark Able ASW weapon system has replaced the Number Two 5-inch mount (Mount 52) on Deck Level One. Dark areas on the deck are anti-slip walkways – always useful on a wet deck. (Naval Historical Center)



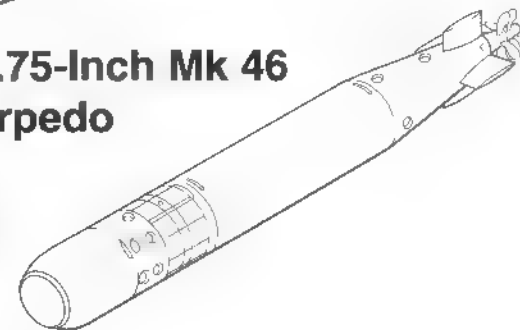
In the early 1960s, ROBERT A. OWENS (DDE-827) underwent the FRAM I Program E64 conversion. Her Number Two and Three Mounts (Mount 52 and 53) were beached in favor of additional ASW equipment such as the Mk 32 triple torpedo tubes, ASROC launcher, and DASH helicopter. ROBERT A. OWENS' forward superstructure and bridge area have been further revised and the tripod foremast is fitted with new AN/SPS-40 air search and AN/SPS-10 surface search radar antennas. (Naval Historical Center)

21-Inch (533MM) Mk 48 Torpedo

12.75-Inch (324MM) Mk 32 Triple Torpedo Tubes



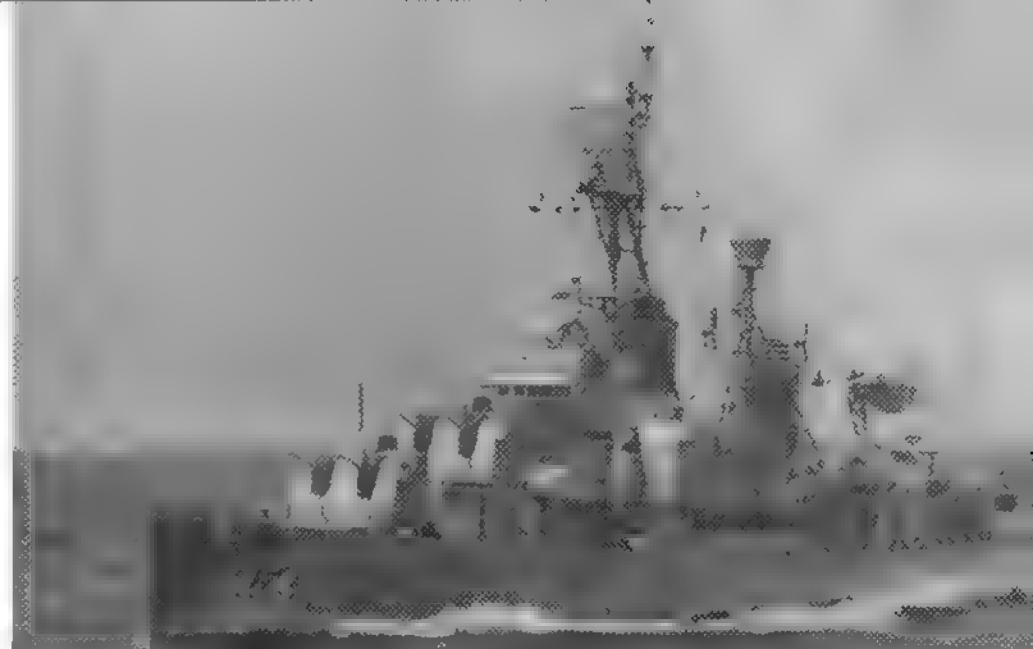
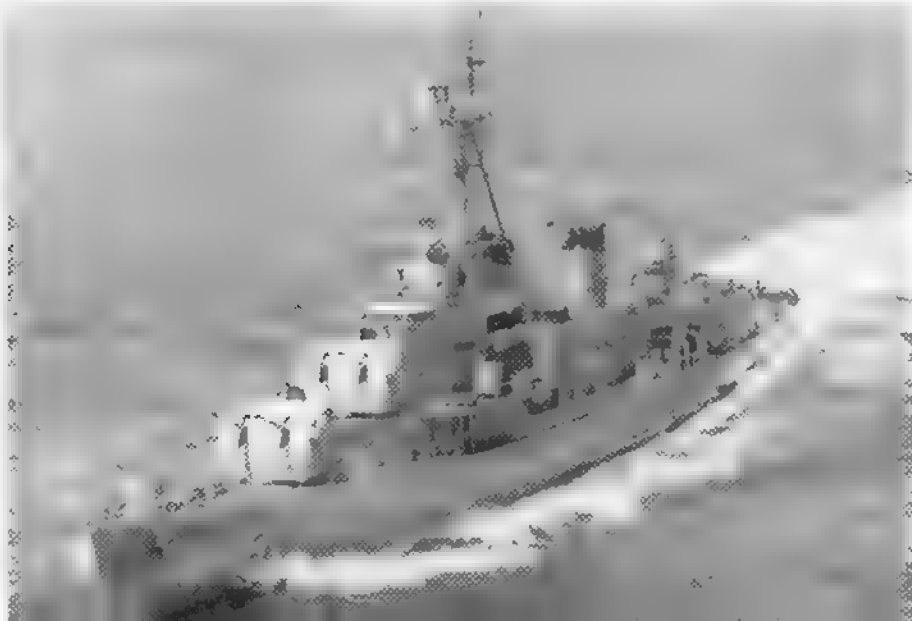
12.75-Inch Mk 46 Torpedo





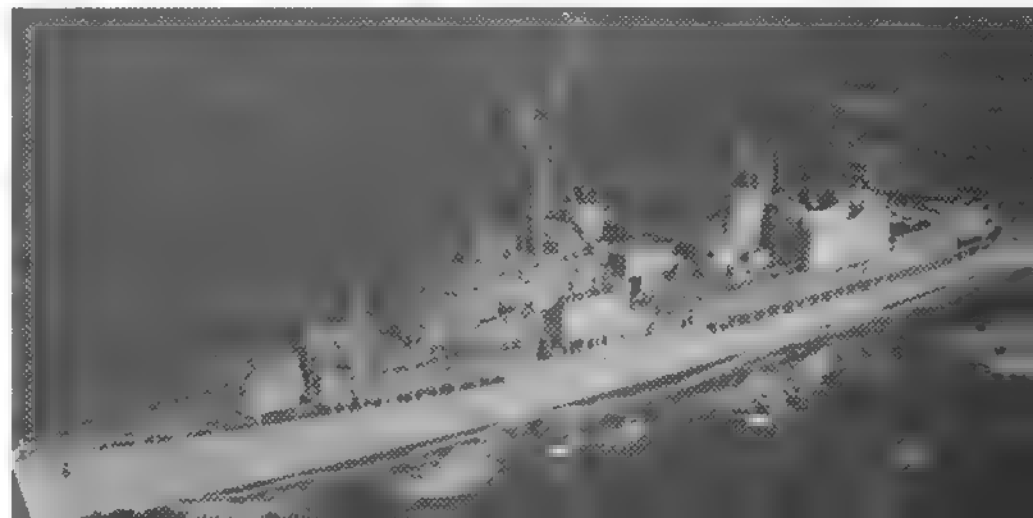
USS TIMMERMAN (DD-828) was utilized as a test ship to investigate different power plants and turbines and the use of lightweight construction methods. TIMMERMAN was completed and commissioned on 26 September 1952, during the Korean War era, making her the last of the GEARING Class to be commissioned. She is still armed with 40mm and 20mm cannon and AN/SPS-6 air search and SG surface search radar antennas are fitted to the pole foremast. She was credited with a flank speed of 41 knots (47 MPH/76 KMH) during trials. She was later reclassified as AG-152, Miscellaneous Auxiliary Ship. (Real War Photos)

USS RICHARD E. KRAUS (DD-849) was completed in 1946 and reclassified as EED. In the 1970s, following her FRAM I Program D63 conversion, she was reclassified as Auxiliary Ship AG-151. AN/SPS-37 air search and AN/SPS-10 surface search radar are fitted to the tripod foremast. ECM antennas are placed on the aft stack. She was sold to South Korea in February of 1977 and renamed KWANG JU (921). (Naval Historical Center)



Completed in 1945, USS GOODRICH (DD-831) was modified as a Radar Picket destroyer in 1949 and reclassified as a DDR. She underwent FRAM II Program 60C conversion during the early 1960s, keeping her DDR status and adding a large AN/SPS-30 height finding radar atop her aft superstructure. ECM and TACAN antennas are on the main mast and AN/SPS-29 air search and AN/SPS-10 surface search radar antennas are fitted to the tripod foremast. (Naval Historical Center)

USS JOSEPH P. KENNEDY (DD-850) underwent the FRAM I, Group B Short Mast Program D61C in the early 1960s. The conversion included the beaching of the Number Two 5-inch mount (Mount 52) and replacing it with a pair of Mk 32 triple torpedo tubes on Deck Level One. The Mk 112 ASROC launcher and control station were mounted between the stacks, while AN/SPS-29 air search and AN/SPS-10 surface search radar was fitted to the short tripod foremast. The ship's hull number (850) was painted on the DASH ASW helicopter deck. KENNEDY now serves as a memorial and museum ship and can be toured at Fall River, Massachusetts. (Naval Historical Center)





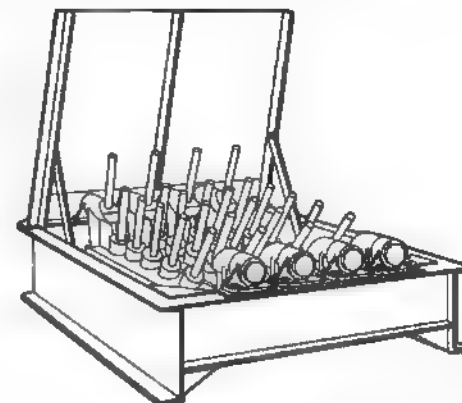
USS LEONARD F. MASON (DD-852) served during the Korean War era still armed with her Number One Mk 14 quintuple torpedo tubes between the stacks and SC-5 air search and SG surface search radar atop the pole foremast. ECM antennas are fitted to the Number Two stack to disrupt foreign radar signals. She was sold to Taiwan and renamed SUI YANG (926) in March of 1972. (National Archives)

USS VOGELGESANG (DD-862) was built by Bethlehem Steel, Staten Island, New York and commissioned on 28 April 1945 – too late to see service in World War Two. She retained her 'as launched' configuration until undergoing FRAM I, Group B Tall Mast Program D62 modifications in the early 1960s. She was sold to Mexico in February of 1982 and renamed QUETZALCOATL (E-03). (Naval Historical Center)

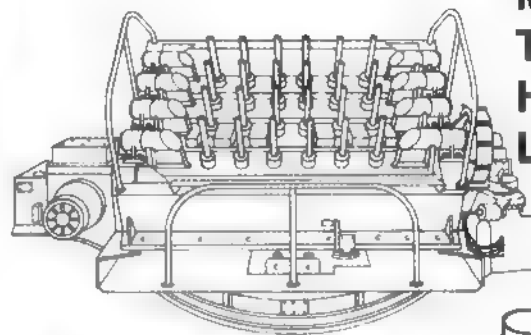


Anti-Submarine Warfare (ASW) Weapons

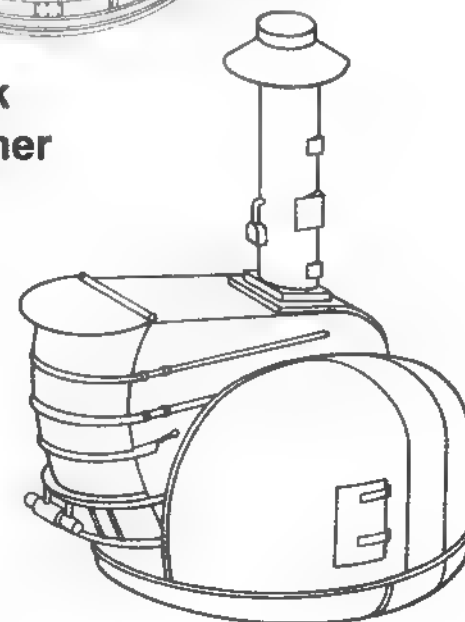
Mk 11 Fixed Hedgehog Launcher



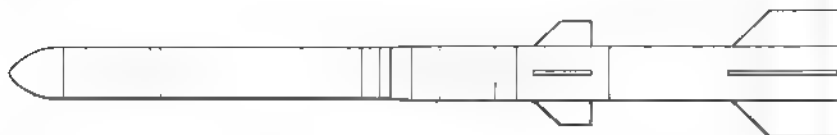
Mk 15 Trainable Hedgehog Launcher



Mk 108 Mark Able Launcher (Fully Elevated)



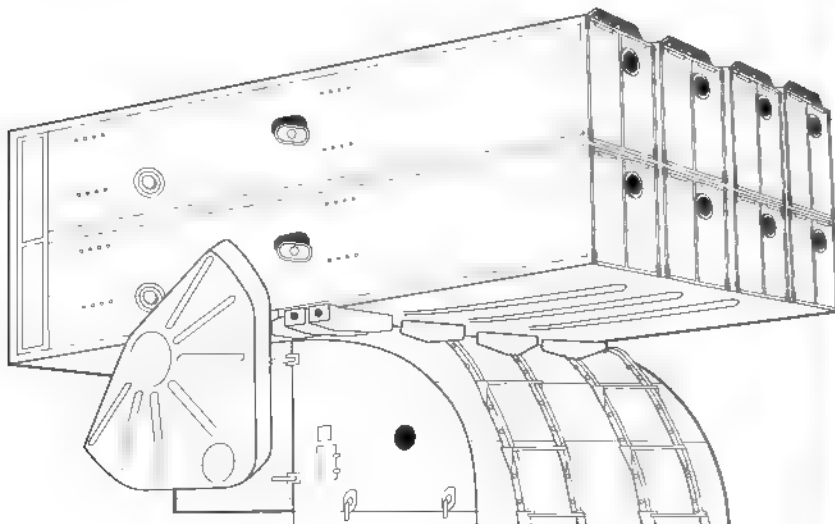
RUR-5A Anti-Submarine ROcket (ASROC)



Honeywell RUR-5A ASROC Specifications

Length:.....15 feet (4.6 m)
Diameter:.....12.8 inches (32.5 cm)
Weight:.....1000 pounds (454 kg)
Propulsion: Solid-propellant rocket
Warhead:.....Either Mk 46 Mod 1 conventional torpedo or 10 kiloton (nominal yield) W44 nuclear depth bomb
Range:.....Approximately 6 nautical miles (7 miles/11 km)

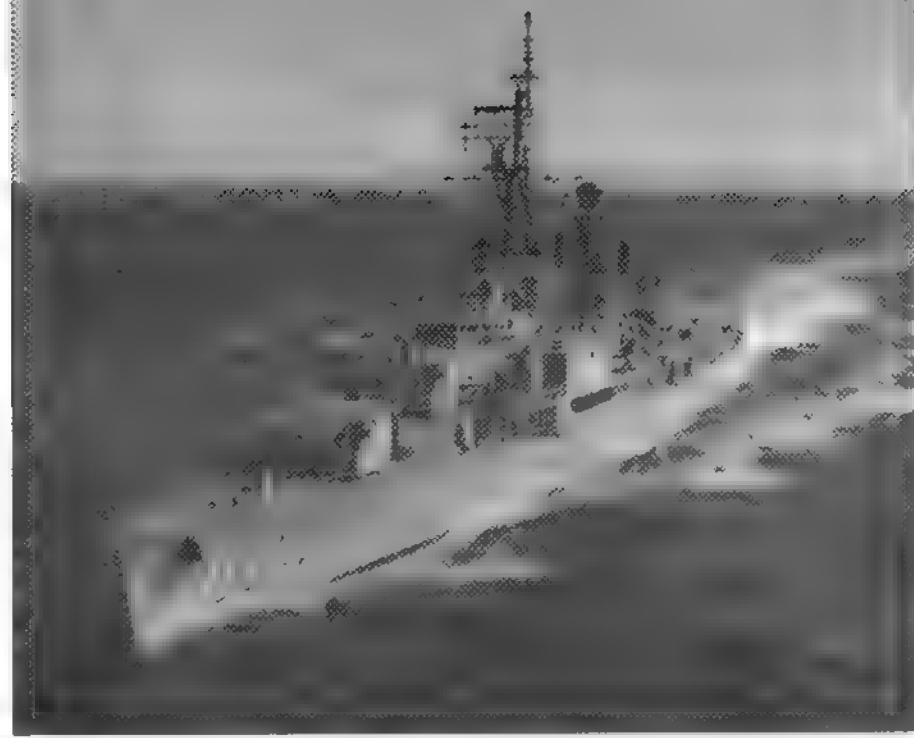
Mk 112 Eight-Round ASROC Launcher



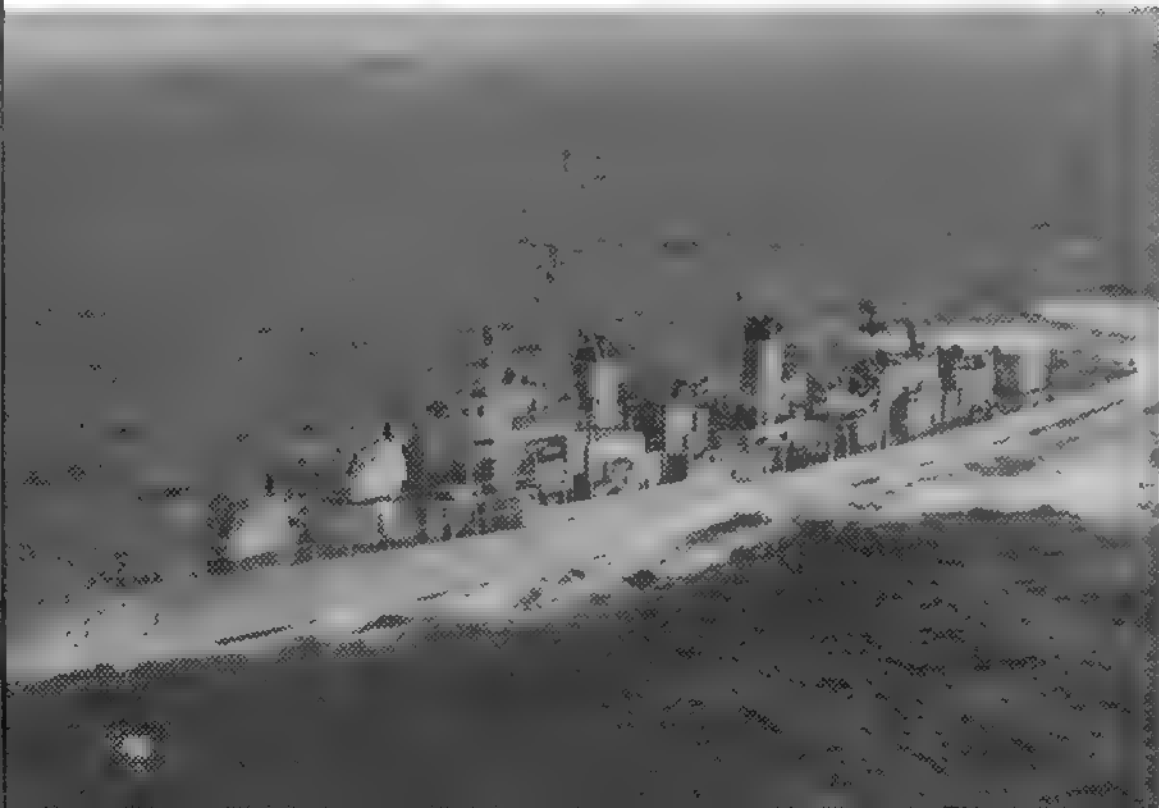
USS FRED T. BERRY (DD-858) was originally designated as a Hunter-Killer (DDK), then as an Escort Destroyer (DDE). In the early 1960s, she underwent the FRAM II Program 61C conversion, which was similar to a FRAM I conversion, but lacked the Mk 112 ASROC ASW launcher. A Mk 15 trainable Hedgehog spigot ASW launcher is fitted in place of the Number Two 5-inch mount (Mount 52) on Deck Level One to increase her ASW capability. (Bureau of Ships)

VOGELGESANG throws her forefoot out of the water while operating in rough seas. She underwent the FRAM I, Group B Tall Mast Program D62 conversion in the early 1960s. AN/SPS-40 air search and AN/SPS-10 surface search radars are fitted to the tripod foremast. The aft mast, mounted on the roof of the DASH helicopter hangar, contains ECM antennas. A Mk 112 ASROC launcher and control station are placed between the stacks. (Naval Historical Center)





(Above Left) USS HAROLD J. ELLISON (DD-864) was commissioned on 23 June 1945, but did not see service in World War Two. She is camouflaged in Measure 22, the Graded System, which utilized 5-H Haze Gray and 5-N Navy Blue. A Mk 14 quintuple torpedo mount is situated between the stacks. She was stricken from the US Navy Registry in October of 1983 and sold to Pakistan, where she was named SHAH JAHAN (D 164). (Real War Photos)



(Above) USS DUNCAN (DDR-874) is configured in a FRAM II Program 61C modification. FRAM II was similar to FRAM I, but lacked the DASH ASW helicopter facilities. DUNCAN is fitted with a Variable Depth Sonar (VDS) array and retains all six of her 5-inch guns. AN/SPS-29 air search and AN/SPS-10 surface search radar is fitted to the tripod foremast and TACAN and ECM antennas adorn the tripod main mast just forward of the aft stack. A Mk 11 Hedgehog spigot launcher sits on Deck Level One next to the bridge superstructure. (US Navy)

(Left) USS HENRY W. TUCKER (DDR-875) was converted to a Radar Picket destroyer and fitted with AN/APS-8 height finding radar atop a van on the aft superstructure. ECM antennas are placed on the aft stack and an additional electronics van is placed between the stacks. AN/SPS-6 air search and SG surface search radar antennas are fitted to the lightweight tripod foremast. A single depth charge roller rack is situated on the starboard side of the fantail. (Naval Historical Center)



(Above) USS PERKINS (DDR-877) was completed as a Radar Picket destroyer and fitted with AN/SPS-8 height finding radar on the aft superstructure van. An additional van is situated between the stacks to house electronic equipment to support the ECM/air search capability. AN/SPS-6 air search and SG-6 surface search radars are fitted to the tripod foremast. PERKINS was sold to Argentina in January of 1973 and renamed COMODORO PY (D 27). (Naval Historical Center)



(Above Right) USS DAMATO (DDE-871) was altered to the FRAM I, Group B Tall Mast Program E63 during her career. The Group B modifications included the removal of the Number Two 5-inch gun mount (Mount 52) on Deck Level One and replacing it with a pair of Mk 32 triple torpedo tubes for the 12.75-inch (324mm) Mk 46 homing torpedo. A Mk 112 ASROC launcher and control station were placed between the stacks, while a DASH ASW helicopter hangar was built aft of the Number Two stack. AN/SPS-40 air search and AN/SPS-10 surface search radars are fitted to the tripod foremast. DAMATO was sold to Pakistan in 1980 and renamed TIPPU SULTAN (D 168). (Floating Drydock)

(Right) USS FLOYD B. PARKS (DD-884) is configured in a FRAM I, Group B Tall Mast Program D62 modification in 1971. She carries AN/SPS-40 air search and AN/SPS-10 surface search radars on her tripod foremast. Her Mk-37 fire control director is pointed directly 90° off the starboard bow. FLOYD B. PARKS' career included an 11 March 1956 collision with the light cruiser USS COLUMBUS (CL-56). PARKS was repaired and reentered service in the Pacific Fleet – likely with a new Captain. (Naval Historical Center)





(Above Left) USS O'HARE (DDR-889) was completed as a Radar Picket destroyer and commissioned on 9 November 1945. An AN/SPS-8 height finding radar antenna is atop the aft superstructure electronics van for additional air search capability. AN/SPS-6 air search radar on the tripod foremast coordinates with the AN/SPS-8 to determine height and range. O'HARE, named to honor the US Naval aviator and fighter ace Edward 'Butch' O'Hare, was sold to Spain in 1979 and renamed MENDEZ NUNEZ (D 63). (Naval Historical Center)



(Above) USS BORDELON (DD-881) was completed as a Radar Picket destroyer in 1949. She underwent a FRAM I, Group B Tall Mast Program R63 in the early 1960s. The conversion added a DASH helicopter hangar aft, a Mk 112 ASROC ASW weapon system between the stacks, and an AN/SPS-40 radar atop the tripod foremast. Two Mk 32 triple torpedo tube launchers are fitted to Deck Level One in place of the Number Two 5-inch gun mount (Mount 52). The bridge-mounted Mk 37 gun control director has been fitted with Mk 28 radar. An AN/SPS-10 surface search radar is also mounted on the foremast. (PHCS W. A. Jackson, US Navy)

(Left) USS MEREDITH (DD-890) was the last of the GEARING Class built. She was commissioned on the last day of 1945 out of Consolidated Steel, Orange, Texas. MEREDITH underwent a FRAM I, Group A Program D60C refit during the early 1960s; a process that beached the Number Three 5-inch gun mount (Mount 53) to free up space on the fantail for the VDS equipment. MEREDITH was sold to Turkey in 1979 and renamed SAVASTEPE (D 347). (Naval Historical Center)

Conversion and Modernization

During the later stages of World War Two, the US Navy began the first of many conversions on the ALLEN M. SUMNER and GEARING Classes to configure them for the specific needs of the war. This practice was already well established using previous destroyer and destroyer escort classes to lay and sweep mines and function in the fast attack transport roles.

A requirement for additional Destroyer Minelayers (DM) was noted during the Solomons Campaign in 1943, since the Flush Deck Minelayers that had been converted in the 1920s were becoming 'long in the tooth' (obsolete). The ALLEN M. SUMNER Class was chosen because studies made on the FLETCHER and BENSON Classes indicated that only 80 mines could be accommodated on either ship. Conversion to DM vessels began in late 1944; by December all 12 ships had been converted.

The conversion included the removal of both quintuple torpedo tubes, moving the K-gun depth charge throwers from the Main Deck to Deck Level One, and adding mine tracks along both sides of the main deck from the amidships passageway to the fantail. The tracks could accommodate up to 120 mines (60 per side). An additional 40MM Bofors quad anti-aircraft mount was added in the space formerly occupied by the Number Two torpedo mount. Once the conversions were completed, the DMs formed Mine Divisions 7, 8, and 9 of Mine Squadron Three and set course for the Pacific.

Changing requirements in the war zone precluded the DMs from performing the duties for which they were designed – they never laid a single mine. Ultimately, the DMs were used in the radar picket and suppressive fire role until the end of World War Two. The DMs earned 31 Battle Stars, three Presidential Unit Citations, and a Navy Unit Commendation between them. USS AARON WARD (DM-34) and USS J. WILLIAM DITTER (DM-31) were both severely damaged by Japanese *kamikaze* strikes. Both ships were deemed too severely damaged to be economically repaired and were stricken after the war.

Between the end of World War Two and the beginning of the Korean War, the US Navy converted 24 of the GEARING Class to radar picket destroyers with the new designation of DDR. This conversion included adding a tripod mast just forward of the Number Two stack. This mast was fitted with an SPS-8 height finding radar and a Yagi data communication antenna. The SPS-8 was used in conjunction with the SC air search radar to determine the range and height of enemy aircraft.

Ten GEARING Class units were converted to Ocean Escorts by removing the Number Two (Mount 52) 5-inch mount and installing a Mk 108 Mark Able ASW trainable Hedgehog weapon system. The Hedgehog fired a series of high explosive, contact fused projectiles ahead of the ship designed to fall on and around an enemy submarine. One explosion generally meant one kill. Once the conversions were finished, the ships were classified as DDEs. Both USS CARPENTER (DDE-825) and USS ROBERT A. OWENS (DDE-827) were completed as Hunter-Killers and reclassified as DDKs.

The final conversion of the SUMNER/GEARING Classes, before the major FRAM (Fleet Rehabilitation and Modernization) program, took place in 1955. USS GYATT (DD-712) – the third GEARING – was converted into the US Navy's first guided missile destroyer.

The conversion included removing the Number Three (Mount 53) 5-inch gun and installing a twin RIM-2 Terrier Mk 10 Surface-to-Air Missile (SAM) launching system, an enlarged aft superstructure for missile storage, and missile tracking and guidance systems. The new radar and missile systems were still in their infancy and required a stable search, track, and launch



USS ROBERT H. SMITH (DM-23, ex-DD-735) was converted to a High Speed Destroyer Minelayer in 1944 and became the class leader. The conversion included the beaching of both sets of torpedo tubes and adding mine tracks that extended along both sides of the deck. The tracks had a capacity of 120 mines of various types. ROBERT H. SMITH is camouflaged in Measure 32/25d for her service in the Pacific in 1944. She was awarded five Battle Stars for her World War Two service. (Naval Historical Center)

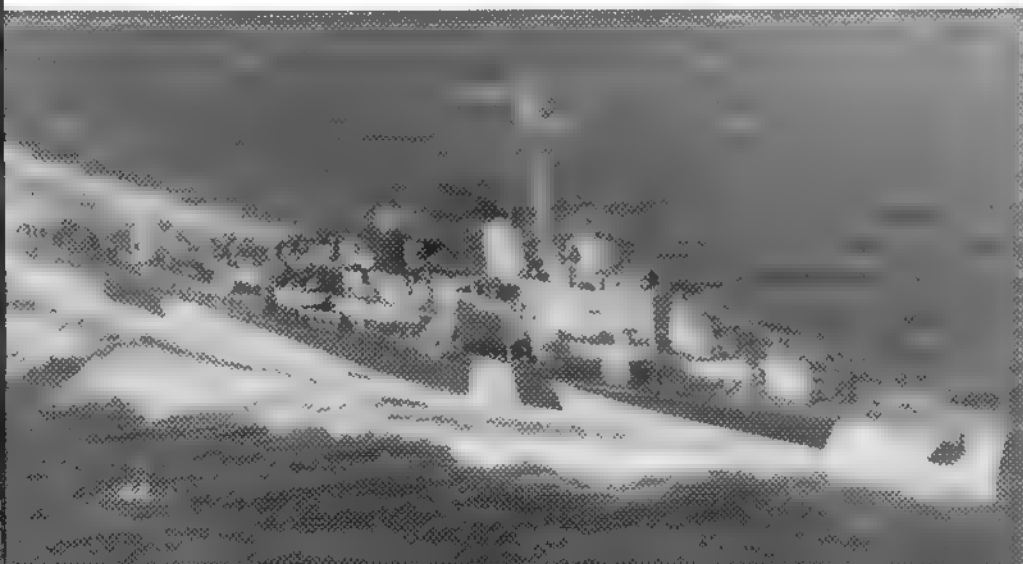
USS ADAMS (DM-27, ex-DD-739) lies off San Francisco, California on 2 May 1945. The destroyer is wearing a Measure 22, the Graded System camouflage scheme. Upon her completion as a High Speed Minelayer, she became part of Mine Division Seven and was sent to the Pacific War Zone. She carries SC-4 air search and SG surface search radar atop her pole foremast. ADAMS earned one Battle Star during her Pacific service. (National Archives)





USS LINDSEY (DM-32, ex-DD-771) was converted to a mine layer by Bethlehem, San Pedro, California and camouflaged in Measure 32/11a for her service in the Pacific. She is armed with ten 40mm guns and ten 20mm automatic cannon for anti-aircraft protection. Wartime censors have eliminated all traces of the radar antennas on the Mk 37 gun director and the pole foremast. LINDSEY earned two Battle Stars during the war. (Naval Historical Center)

USS J. WILLIAM DITTER (DM-31, ex-DD-751) was converted to a High Speed Minelayer and sent to the Pacific War Zone wearing a Measure 32/3d camouflage scheme. She was heavily damaged on 6 June 1945 by two Imperial Japanese Navy *kamikazes* off Okinawa. The damage proved to be too serious for economical repair; J. WILLIAM DITTER was decommissioned on 28 September 1945 and sold for scrap. (Naval Historical Center)



Two Japanese Aichi D3A 'Val' kamikazes struck LINDSEY on 12 April 1945, while she was providing shore bombardment. The hits caused near fatal damage to the Destroyer Minelayer. Over 60 feet (18.3 m) of the forward hull and superstructure, including the Number One 5-inch gun (Mount 51), were lost. LINDSEY was fitted with a temporary bow and sailed to the United States for permanent repairs. She served in the US Naval Reserve until 1969 and was finally stricken on 10 October 1970. (Naval Historical Center)

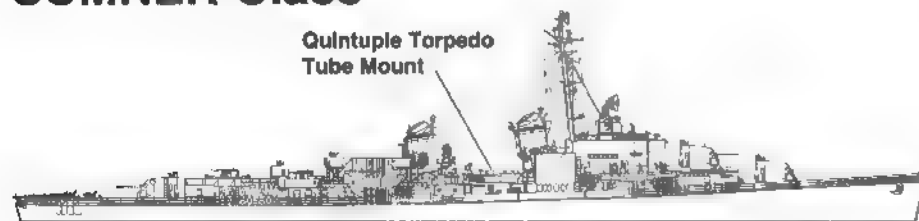
platform. Consequently, the hull was fitted with a Denny-Brown Stabilization System that consisted of two 45 square foot (4.2 M²) fins extending out from amidships. The fins were retractable to reduce drag at high speeds. Once the conversion was completed, the destroyer was reclassified as DDG-1. In 1962, the missile system was removed and GYATT was reclassified as DD-712.

In an effort to maintain the GEARINGS' Cold War combat capabilities, the class began undergoing FRAM I or FRAM II conversions in 1959. Like the previous SUMNERS, the upgrades focused mainly on the ships' capabilities against a rapidly emerging Soviet ballistic missile and attack submarine threat. The first ships to be so modified was USS PERRY (DD-844). The FRAM I upgrade included installing a Mk 16 eight-cell launcher for the RUR-5A Anti-Submarine ROCKET (ASROC) and control booth between the stacks. ASROC is a ballistic weapon that launched either a Mk 44/46 lightweight homing torpedo or a nuclear depth bomb approximately 6 nautical miles (7 miles/11 km) from the ship. A hangar and landing pad for the QH 50 Drone Anti-Submarine Helicopter (DASH) was added, and a pair of Mk 32 triple torpedo tubes were installed on Deck Level 01 just forward of the bridge area. Depending upon the exact nature of the conversion, either or both Number Two and Three (Mount 52/53) 5-inch mounts would also be removed. One of two types - short or tall - of foremast were also installed. The FRAM II conversion included installing the DASH hangar, but no ASROC launcher. FRAM I added eight years and FRAM II five years of useful life to the aging destroyers.



The GEARING Class USS SOUTHERLAND was completed as a radar picket ship and reclassified as DDR-743 in 1950. The conversions included installing a tripod mast between the stacks with SP air search radar and adding additional radar countermeasures antennas. She retained the Number Two quintuple torpedo tubes and full anti-submarine warfare equipment. SOUTHERLAND is camouflaged in the Navy Blue Measure 21. (Floating Drydock)

SUMNER Class



SUMNER Class DM Conversion



USS AARON WARD (DM-34, ex-DD-773) was converted to a High Speed Minesweeper. On 3 May 1945, she was struck by no less than four Japanese *kamikazes* while operating as a radar picket ship off Okinawa. The hits swept away her Number Two stack and most of her anti-aircraft armament and directors – only her Number Three 5-inch mount appears untouched amidst the wreckage. Only a Herculean effort by the damage control parties kept the battered ship from sinking. Following the war, AARON WARD was decommissioned and sold for scrap. (Naval Historical Center)

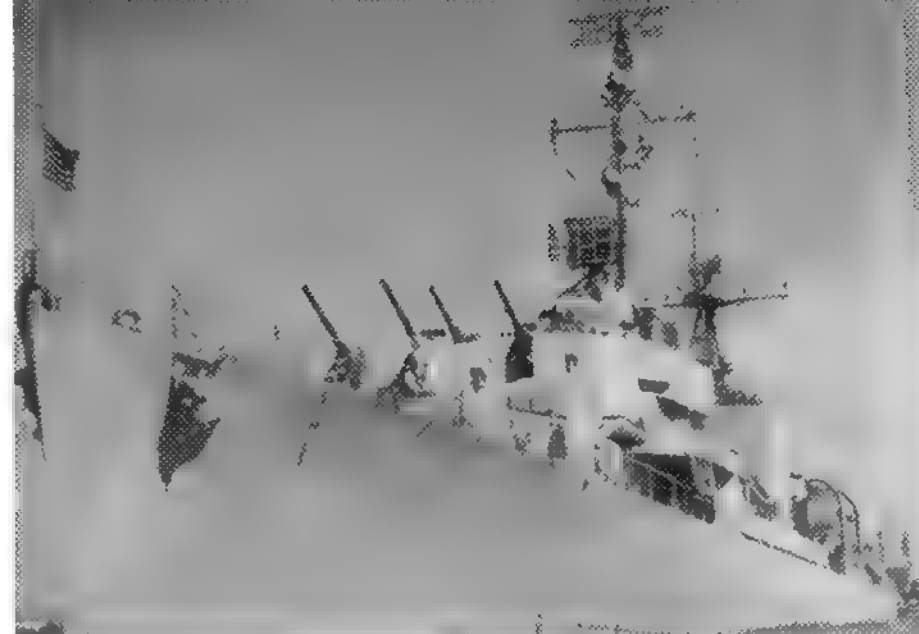
USS EPPERSON (DD-719) steams at high speed on a cruise sometime after FRAM I upgrade in the early 1960s. A Mk 108/RUR-4 Mark Able depth charge launcher replaced her Number Two 5-inch gun mount (Mount 52). She is finished in Measure 27, the Haze Gray 'peacetime' scheme. EPPERSON was sold to Pakistan in 1975 and renamed TAIMUR (D 166). (Herbert McAlavy)





USS CHEVALIER (DD-805), like her sisters SOUTHERLAND and HIGBEE, was completed as a radar picket ship and served in the Pacific earning one Battle Star. She is camouflaged in Measure 22, the Graded System. CHEVALIER was sold to South Korea in July of 1972 and renamed CHUNG BUK (915). (Naval Historical Center)

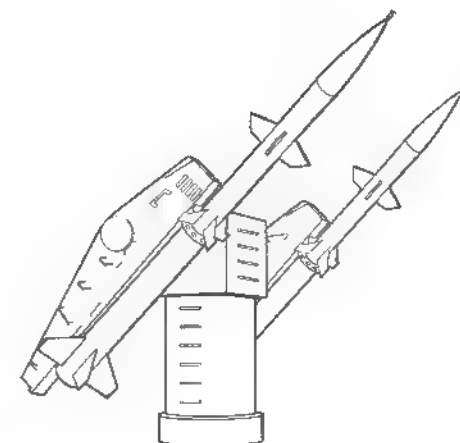
USS GYATT (DD-712) became the first US destroyer converted to a guided missile ship. The conversion was completed on 26 September 1955 and she was reclassified as DDG-1. The conversion included the removal of the Number Three (53) 5-inch mount and adding a twin RIM-2 Terrier missile launcher and missile handling facilities. A Denny-Brown Stabilization System, consisting of two 45-square foot (4.2 m²) retractable fins extending out from amidships, was used to help steady the ship in rough seas. (Floating Drydock)



USS HIGBEE (DD-806) was completed as a radar picket ship and served in the Pacific in 1945. She was the first US Navy ship named after a woman – Lenah Higbee, Commandant of the Navy Nurse Corps from 1909 to 1922. The 'Leapin' Lenah' earned one Battle Star for her World War Two service and seven for her operations off Korea. HIGBEE is camouflaged in Measure 27, the Haze Gray System. SC-4 air search and SG surface search antennas are fitted to the pole foremast and Yagi and SP antennas to the tripod mast between the stacks. The thin hull plating has taken on a slightly wrinkled appearance due to manufacturing, temperature, and movement stresses. (Real War Photos)

General Dynamics RIM-2 Terrier Surface-To-Air Missiles (SAMs) on Mk 10 Twin Launcher

Length:.....26 feet 2 inches (8 m)
 Span:.....3 feet 6 inches (1.1 m)
 Diameter:.....18 inches (45.7 cm)
 Weight:.....3000 pounds (1361 kg)
 Propulsion: Solid-propellant booster and solid-propellant sustainer rocket
 Warhead:.....W45 nuclear
 Range:.....20 to 40 nautical miles (23 to 46 miles/37 to 74 km)





USS BASILONE (DDE-824) was one of the two GEARING Class destroyers that were completed as Ocean Escorts and commissioned in 1948. A Mk 108/RUR-4 Mark Able depth charge launcher has replaced her Number Two 5-inch mount. Two Mk 11 Hedgehog

launchers are mounted to each side of the conning tower on Deck Level One. BASILONE underwent the FRAM I Program E64 modification in the early 1960s and continued as Class Leader. She was stricken from the US Naval Register in 1977. (Real War Photos)



The South Korean destroyer INCHON (918) moves in a heavy cross-sea off the Korean peninsula in the 1980s. INCHON was the ex-ALLEN M. SUMNER Class USS DeHAVEN (DD-727) that had undergone FRAM II conversion in the early 1960s. INCHON carries AN/SPS-40 air search and AN/SPS-10 surface search antennas on the tripod foremast. (Kyeong Weon Cheon)



Foreign Service

The United States has insured that friendly (at the time) foreign military forces have been supplied with the fighting ability to keep parity with their perceived enemies around the globe. Beginning in the 1970s, the ALLEN M. SUMNER and GEARING Class destroyers were supplied to 14 countries in Central and South America, Europe, and Asia under various Military Assistance Programs (MAPs) and Foreign Military Sales (FMS) programs. The FMS were sales through the Defense Security Assistance Agency (DSAA) directly to a foreign government. The MAP was a grant-in-aid program, again administrated by DSAA, to assist a foreign government that did not have the military expenditure sufficient to make a large purchase, such as a destroyer. Since 1951, the United States has given or sold over 300 destroyers – most of them coming from the FLETCHER, ALLEN M. SUMNER, and GEARING Classes.

Once in the hands of a foreign government, the destroyers could be used and modified to suit the local military situation. The Republic of China (ROC), also called Taiwan, received most of the late war destroyers, with eight of the ALLEN M. SUMNERS in both FRAM I and II configuration being received and placed in the LO YANG Class. They were all retired by 1999 having long outlived their usefulness to the ROC Navy, although they were valuable in keeping up appearances. Fourteen of the GEARING Class were received by the ROC Navy and they were placed in the CHAO YANG Class. Under the *Wu Chin* I, II, and III air defense modernization programs, four *Hsiung Feng* II Surface-to-Surface Missile (SSM) launchers were added along with ten Surface-to-Air Missile (SAM) launchers, one 76MM gun, two 40MM/70 cannon, and a 20MM Phalanx Close-In Weapon System (CIWS).

Mexico received a pair of GEARINGS and they continue to serve today. Chile, Colombia, Argentina, Brazil, Venezuela, and Ecuador received both the ALLEN M. SUMNER and GEARING Classes in varying numbers for their respective navies. Pakistan, Iran, and Turkey took possession of both classes, while in Europe, GEARING Class ships entered naval service in Greece and Spain. All seven Spanish GEARINGS received the FRAM I D60 modification.

The ALLEN M. SUMNER and GEARING Classes have long since been stricken from the US Naval Registry, but many continue to serve proudly around the world providing security and defense for many foreign nations.

NETZAHUALCOYOTL (E-04) was the ex-GEARING Class USS STEINAKER (DD-863) that was sold to the Mexican Navy in February of 1982. STEINAKER underwent a FRAM I Program R64 refit during the early 1960s. AN/SPS-37 air search and AN/SPS-10 surface search radars are fitted to the tripod foremast. (Author's Collection)



The Turkish Navy acquired the GEARING Class USS ROBERT H. McCARD (DD-822) in June of 1980 and renamed her KILIC ALI PASA (D 349). The Turks further converted the FRAM I destroyer by adding an enclosed 35mm/90 Oerlikon twin anti-aircraft gun on the helicopter deck. ROF-8 Mk 141 Harpoon anti-ship missile launcher tubes – four each to port and starboard – are mounted forward of the 35mm cannon on the helicopter deck. (Author's Collection)



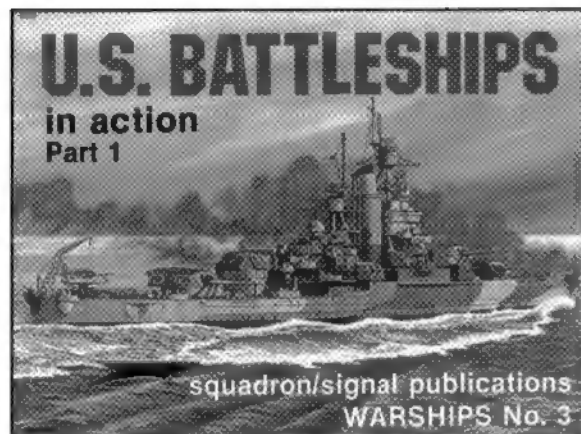
USS HENDERSON (DD-785) was the GEARING Class FRAM I conversion that was sold to the Pakistan Navy on 1 October 1980 and renamed TUGHRIL (D 167). She has had her aft twin 5-inch mount replaced by a 20mm Phalanx Mk 16 Close-In Weapons System (CIWS) for additional anti-aircraft and anti-ship missile protection. AN/SPS-40 air search and AN/SPS-10 surface search radar antennas are fitted to the short tripod foremast. (Author's Collection)



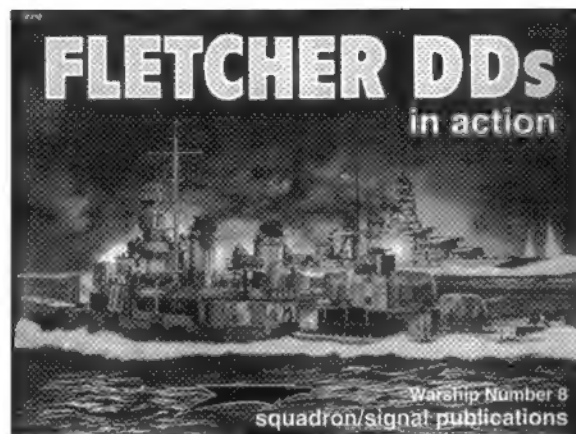
USS BRINKLEY BASS (DD-887), a GEARING Class destroyer, was sold to the Brazilian Navy in December 1983 and renamed MARIZ E. BARROS (D.26). BRINKLEY BASS underwent a FRAM I Program D61C modification in the early 1960s. AN/SPS-40 air search and AN/SPS-10 surface search radar antennas are fitted to the tall tripod foremast. (Author's Collection)

More US Warships

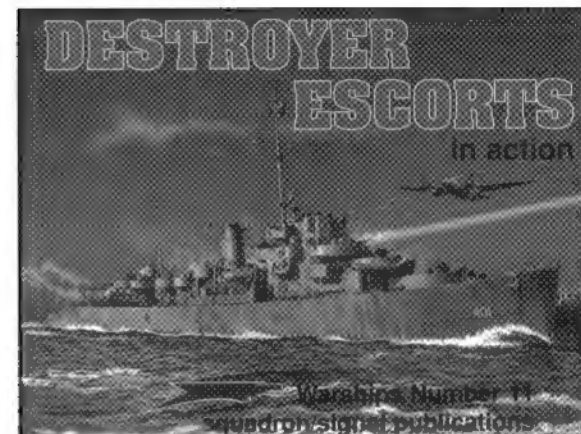
from squadron/signal publications



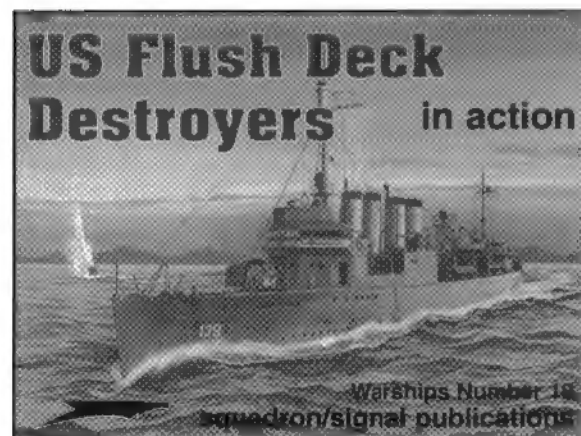
4003 US Battleships, Part 1



4008 Fletcher DDs



4011 Destroyer Escorts



4019 US Flush Deck Destroyers



4020 US Destroyers, Part 2



4021 US Destroyers, Part 3

For a complete listing of squadron/signal books, go to www.squadron.com

The SUMNER Class USS HUGH W. HADLEY (DD-774) was credited with shooting down 23 Japanese *kamikazes* off Okinawa while serving as a radar picket on 11 May 1945. She was hit by a Baka bomb and two other aircraft during this action. HUGH W. HADLEY was awarded the Presidential Unit Citation and one Battle Star for her actions that day. She was camouflaged in Measure 31/25d in 1945.

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USS AGERHOLM (DD-826) fired an Anti-Submarine ROcket (ASROC) armed with a nuclear depth charge in the Pacific on 11 May 1962. This occurred during Test SWORDFISH of Operation DOMINIC. The GEARING Class AGERHOLM underwent a FRAM I Program D60C conversion in the early 1960s.

